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A Monthly Newspaper published in the interests of the Berry Growers, Deciduous, Citrus, Dried and Canned Fruitgrowers, and Market Gardeners.

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A CONFERENCE of representatives of the Council for Scientific and Industrial Research and State Ministers has decided that the Commonwealth grant of £20,000 for research, demonstration and instruction in connection with the Apple and Pear industry of Australia shall be as follows:—

A. Allocation for Demonstration and Advisory Work and the Improvement of Cultural Practices, including Demonstration of Re-working, etc., for one year.

1. New South Wales: Instructor for packing and re-working. Machine for washing arsenical residues £850

2. Victoria: Two officers for fertiliser, spraying, etc., trials on demonstration plots. Equipment and materials, etc., for above. Three instructors (4 months) for re-working. Three instructors (4 months) for packing £3,350

3. Queensland: One officer for orchard instruction generally £550

4. South Australia: Two instructors for packing and re-working. Expenses of completing orchard census . . . £1,150

5. Western Australia: One instructor for packing £550

6. Tasmania: Three instructors for packing and re-working. One orchard instructor . . . £2,400
Total £8,850

B. Allocation for Research for two years.

1. C.S.I.R.: For chemist re codlin moth work. For experimental consignments Pears abroad. For survey of "die-back" and sour sap problem. For provision facilities gas storage work by Carne. For provision equipment study spray injury . . . £2,450

2. New South Wales: Assistance in taking records, stock and scion studies, Bathurst. Assistance in work removal arsenical residues. Assistance further study internal cork of Apple in Kentucky district £720

3. Victoria: Special study codlin moth in Pear in Goulburn Valley. Assistance furthering pot culture trials to Pears re deficiency symptoms, etc. . . . £1,800

4. Queensland: One horticultural officer for research into particular problems, Stanthorpe area, such as soil fertility, soil erosion £1,000

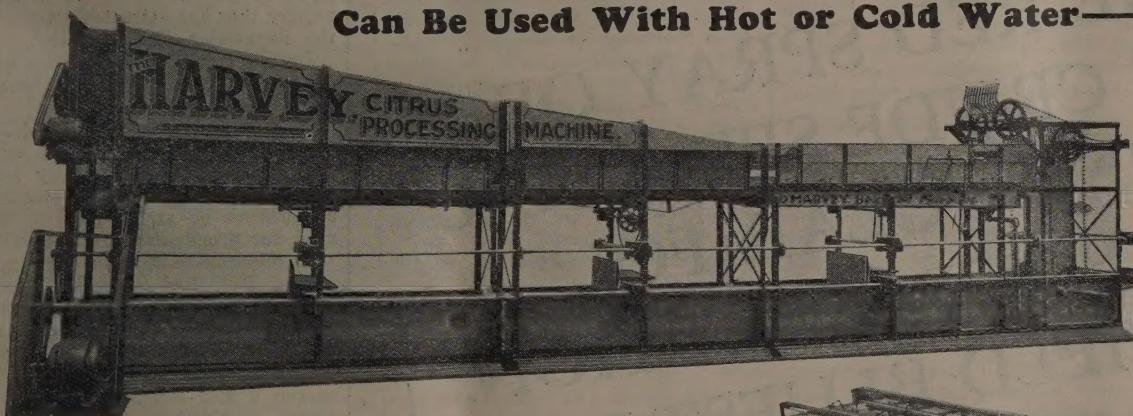
5. South Australia: One horticultural officer to co-ordinate spray trials, fertiliser treatments, etc. £1,200

6. Western Australia: One officer either for "die-back" investigations or for green manuring studies £1,000

7. Tasmania: One plant pathologist for studies of black spot, etc., and equipment. One assistant entomologist for jassid and light brown Apple moth (latter now in Victoria and former also in N.S.W.) £2,350

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Special—Thrips Investigation League	£150
Total	£10,170

During the conference, reference was frequently made to the need for a grant on an annual basis for a period of years, such as £10,000 or more for five years as was done in the case of tobacco.

NEWS IN BRIEF.

At the April meeting of the Tasmanian State Fruit Board, a letter was received from the Premier (Mr. A. G. Ogilvie, K.C.), informing the Board that the Prime Minister (Mr. J. A. Lyons) had approved of the appointment of Mr. W. H. Calvert, M.L.C., as representative of the fruit industry of the Tasmanian section of the Eastern Trade Committee.

German scientists have discovered that leaves from Australian-grown elm trees possess certain chemical properties which do not exist in elm

leaves in colder Europe. Already some hundreds of bags of elm leaves have been exported this autumn.

Citrus growers are urged to observe maturity standards before sending Oranges to market. The Victorian standard is that an Orange more than 1.6 per cent. of acid is immature.

PERSONAL.

Mr. W. H. G. Keyes has been appointed Senior Fruit Inspector in the Victorian Dept. of Agriculture, in place of Mr. Ernest Meeking, who recently retired through effluxion of time. Mr. Keyes has been associated with the Fruit Inspection Branch of the Department for many years — both in the country centres and in the Department's office. He is a highly esteemed officer and his appointment is a popular one.

Mr. L. J. Provan, B.A.Sc., Horticultural Research Officer, Victorian Dept. of Agriculture, who for several years has specialised in citrus research, is now giving specialised attention to varied phases of research work, including manures and spraying in connection with deciduous and other trees. Mr. Provan frequently visits orchard centres and is appreciated by all who know him.

Mr. A. F. Bell, C.M.G., who is well known in the dried fruits industry as the Government nominee on the Export Control Board, has been appointed Deputy-Chairman of the Commonwealth Bank Board during the absence of Sir Claude Reading in England.

LETTER TO THE EDITOR.

The Editor,
"Fruit World,"
Melbourne.

Red Apple Sports.

Sir,

In your recent issue mention is made of Red Sport of the Jonathan variety that has attracted attention in the Bayswater (Vic.) district.

During recent years quite a series of Apples of the type have been located.

In Tasmania, we have a Red Jonathan similar to that described by Mr. H. Chandler. This is very highly thought of. It has been tested, and appears to be stable; and is being used for propagation and reworking.

In addition to this, at the Experimental Plot, Red Sports of Crofton, Cox's Orange Pippin (Crimson Cox), Delicious (Lalla), are growing under observation, and trees have already been propagated and distributed. This season a Red Sturmer has been reported in Northern Tasmania.

With the trend of public demand favoring the bright red Apple for dessert purposes, it looks as though, in a few years, the average shop window will display an unbroken red color scheme. Form or shape will be the principal superficial determining factors.

With the development of these color "Sports," there is need for careful attention to picking maturity. The earlier development of color which generally takes the form of a deep-suffused blush over the whole of the skin surface, is likely to bring about earlier harvesting, that is, at the time when the variety is still actually in an immature condition. Fruit such as this coming on the market will probably lead consumers to the erroneous belief that the Red "Sport" is definitely inferior to the original variety.

(Signed) P. THOMAS,
Chief Horticulturist, Tasmanian Department of Agriculture, 22/4/36.

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Spraying for Insect Pest and Disease Control

CODLIN MOTH CONTROL

Present-day Practices Reviewed

The Codlin Moth is Believed to be Developing Immunity from Arsenate of Lead :: Effect of Weather Conditions :: Importance of Orchard Hygiene :: Intelligent Spraying Programme Essential :: Use of Calcium Arsenate and Combinations :: Reduction of Moth Population by Heavy Spraying, then Lighter Sprayings Afterwards :: Danger of Lead Arsenate to Soil.

(By Dr. R. L. Webster, Entomologist, State College of Washington, Pacific Coast, U.S.A.)

Codlin moth control is a subject of pressing importance to fruitgrowers in Australia and New Zealand.

It will be remembered that orchardists in this part of the globe received appreciated and substantial help from U.S.A. when our American friends discovered the value of arsenate of lead. The introduction of this remedy from U.S.A. opened the way for the rehabilitation of orchards in Australia, which were in danger of extinction because of the depredations of the moth.

What is the Position To-day?

Scientists in U.S.A.—particularly on the Pacific Coast, where conditions exist similar to our own—are again faced with a major problem because of the same pest.

Once more their entomologists, chemists and horticulturists are collaborating to discover a fresh remedy for the codlin moth, and the following article—republished from "Better Fruit," U.S.A.—will reveal the progress to date.

The "Fruit World" recently published the findings of the scientists regarding the use of calcium arsenate and combinations and the success achieved under defined conditions. This subject, among others, is reviewed in the article herewith. This will be found stimulating to our men of science and practical orchardists here.

We commend this article to our readers for careful consideration. The writer is the well known Dr. R. L. Webster, Entomologist, State College of Washington (Pacific Coast), U.S.A.

[Readers will note that the months referred to in the article apply to the Northern Hemisphere, but for ease in reading we have inserted in brackets the corresponding months here. — Editor, "Fruit World and Market Grower."]

IN THE PAST FIVE YEARS the problem of codlin moth worm control has become so acute in the Pacific Northwest that many growers are beginning to question every phase of our present practices and recommendations for combating the codlin moth. The situation goes back to the fall of 1931, when there was much damage by late entering worms and has continued unabated except for a breathing spell during the short season of 1933. Even in 1933, however, worm population in the orchard does not appear to have actually been reduced to any great extent, a situation that became clearly evident in the wormy year of 1934.

Because of the late spring in 1935, it seemed that worm damage might again be reduced to a minimum, at

least following a heavy spray programme started early in the season. This notion persisted until the month of September (March) came along and with it the most favorable temperatures for worm activity that have occurred during September (March) for the last ten years.

According to Weather Bureau records for Wenatchee, Washington, the mean temperature for September (March) since 1926 is 61 deg. In 1935 the mean temperature was 65.6 deg. On 18 days during September (March), 1935, the maximum temperature at Wenatchee was 80 deg. or higher. As a matter of fact, on seven of these days the maximum was over 90.

High temperatures undoubtedly favor continued worm attack.

Regardless of the spray programme that has been carried out during the forepart of the season, every Apple grower knows that it is the hardest job in the world to combat these late entering worms.

That conditions in codlin moth control have changed greatly in the last 10 years we have no doubt. But just what factors are involved in these changing conditions and what may be the relative importance of these various factors is a question on which all of us are likely to have a different opinion. Three years ago at the Wenatchee meeting of the Washington State Horticultural Association I pointed out that there was some little evidence to support the notion that the codlin moth was actually developing a degree of resistance to insecticides. Whether this may or may not have been warranted by the facts submitted at that time is another story. Certainly, however, the problem of worm control has not become any easier during the last three years and it is doubtful if conditions will change much in the very near future.

Ten years ago, when Anthony Spuler was detailed by the Washington Experiment Station to Wenatchee, and began an intensive programme of spray investigations, he was able to reduce wormy Apples on Jonathans to four per cent. by the use of what was then known as a double strength spray programme, lead arsenate four pounds to the hundred. When only two pounds were used, the number of wormy Apples was something over seven per cent.

This was done with lead arsenate, used without additional materials to improve coverage or to increase the amount of arsenic deposit on the sprayed fruits. Would it be possible to do so again? Could any grower go into a severely infested orchard in the heart of the irrigated district in eastern Washington in 1936

and cut down the infestation to four per cent. by the use of lead arsenate alone? Frankly, I do not believe it could be done. In this paper I want to discuss some of the factors involved in spray practice for worm control, to attempt to evaluate, as far as may be possible, the relative importance of these factors.

Quality of Lead Arsenate.

First of all it is desirable to point out that the lead arsenates on the market at present are available in better physical condition than ever before, and actually have a guaranteed purity of from 96 to 98 per cent. Chemical analyses show that the most commercial brands of lead arsenate used in the North-west are 98 per cent. lead arsenate or higher. Where lead arsenate has been a failure, the blame cannot be laid at the door of the manufacturers.

In the North-west, preference is exhibited by apple growers for those brands of lead arsenate that do not contain a deflocculator following the investigations of Spuler, presented at the 1930 meeting of the Washington State Horticultural Association.

Resistance to Insecticides.

The time is too short to say much about the idea of resistance to chemical treatment. This is an idea, however, that has gained considerable support among investigators on pest control. While we may not be able to explain to the satisfaction of our more scientific brethren how any changes have come about, it is quite patent that spray practices of 10 years ago do not serve to afford protection from worms to-day. This condition of affairs is by no means confined to the irrigated regions in our western states, but affects, to a greater or less extent, all apple growing sections of the country. Further evidence has been accumulated by investigators in eastern states that there may be some degree of resistance or tolerance to insecticides in general. In other words, the use of some other insecticide than lead arsenate may not, after all, offer more than some temporary advance in codlin moth control by spraying.

Codlin Moth and the Weather.

The mild winter so far in the Pacific Northwest, at least up till mid January (July), when this article is being written, brings up the question of winter mortality of the larvae. It seems scarcely likely that the cold snap early in the fall, disastrous to unpicked late varieties of Apples, would have much effect on overwintering larvae. Low winter temperatures do kill codlin moth larvae, but the temperature must go down to 18 to 20 degrees below zero to have very much effect. Severe January (July) temperatures in eastern states this year may serve to reduce overwintering worms to a point where control may be regained by a more reasonable spray schedule.

Other factors have much to do in determining the severity of worm attack. Such factors are represented in the influence of an early season, of favorable or unfavorable oviposition temperatures during the first brood, of moth activity between broods, and

of favorable or unfavorable temperature during the period of second brood activity. More important than any of these is the intensity of worm population in the orchard. The more worms in the orchard at the start of the season, the more difficult the problem of control.

Heavy Infestations.

Looking back over the last 10 years in the Northwest, there is one factor that strikes forcibly—the increased worminess that exists at the present time. This is in large measure due to the two factors just mentioned; resistance to insecticides, and favorable weather influences.

Without question some of this wormy condition of affairs may be attributed to inadequate spraying. Then again, what was considered efficient spraying 10 years ago does not suffice now. The more adequate studies we make, particularly when we utilise chemical means as a measuring stick to determine the quantity or arsenic deposit necessary to control worms, the more we are convinced that greater protection in terms of arsenic per square inch of Apple surface is needed to keep worm damage down throughout the season.

Organic Insecticides.

The chemists have told us that, in order to get away from arsenic residue, and from lead residue, we should develop some organic insecticide to utilise for spray purposes. When Apples are sprayed with insecticides to protect them from codlin moth attack, it is absolutely necessary to maintain a deposit of spray material that will keep out the worms. Early in the season, because of the rapid growth of the Apples, it is particularly necessary to maintain this protection.

Again, it is necessary to maintain a high degree of protection during August (February), and possibly even throughout September (March), depending upon the season. It is difficult enough to do this with lead arsenate; it has been even more difficult to do so with organic insecticides, which only too often break down within a relatively short time following applications.

Nicotine and Oil.

When the lead residue problem first came up several years ago, there was a tendency to resort to the use of nicotine extracts, primarily to reduce the lead load on Apples at harvest. In his investigations at Wenatchee, Spuler found that in some years the oil-nicotine combination was equivalent in worm control to a straight lead arsenate schedule followed throughout the season. In recent years we have come to believe that the oil-nicotine combination does not serve to maintain adequate protection when Apples are subjected to severe and continued attack of second brood worms late in the season. In other words, the oil-nicotine combination, especially when applied in late cover sprays, affords protection only when the infestation is not severe, and in season when temperatures in August (February) and September (March) are not particularly favorable to continued worm attack.

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**SPRAYING FOR INSECT PEST
AND DISEASE CONTROL (cont.).**

pyrethrum combinations have likewise failed under conditions of severe infestation. Marshall found that as many as 10 cover sprays did not control worms in a severely infested orchard at Wenatchee. Here, again, the difficulty appears to be that of maintaining adequate protection on Apple surfaces throughout the season. Where favorable results have been obtained with pyrethrum extracts by eastern investigators, either the initial infestation in the orchard has been light, or there has been practically no second brood, or both.

Rotenone represents another organic compound that offered promise until it was found that rotenone broke down under the influence of sunlight. This chemical represents the main insecticidal principle in derris root, though recent studies have shown that other organic compounds are found along with rotenone.

Even though much experimentation has been done with organic insecticides, and more will be done, so far these have fallen far short of meet-

ing the immediate situation in codlin moth control.

Fluorine Compounds.

Although the Washington Experiment Station has done some work on fluorine compounds, most of the investigations on fluorine sprays in the Northwest have been accomplished by the Federal Entomological Laboratory at Yakima, under the direction of E. J. Newcomer. In 1932, a recommendation for cryolite was made for Washington, based, for the most part, on the favorable results obtained in the Yakima laboratory. Opposition on the part of investigators to the use of fluorine has not been because of any deficiency of this material as an insecticide, but because of the unsatisfactory status of fluorine removal. If it may be shown that there is no fluorine residue problem, or that fluorine residue may be adequately removed by means that do not add to great expense to the cost of washing fruit, we may come to the use in much greater quantities of this valuable insecticide.

The imposition of a fluorine tolerance by Food and Drug Administration brings with it the necessity of a

second residue analysis for fluorine, in addition to the usual analysis for lead residue. Investigators have not given up hope that fluorine compounds may still find a place in codlin moth control, at least so far as late applications are concerned. In the meantime, considerable study is being made perfecting methods for fluorine analysis, although at the present time the Food and Drug Administration is using one method of analysis and the Bureau of Chemistry and Soils another.

Improved manufacturing processes have resulted in a far better product, especially in physical form, than that first put on the market. The whole matter needs further study, but we can only do one thing at a time.

Calcium Arsenate.

At the December meeting of the Washington State Horticultural Association, James Marshall, assistant entomologist of the Wenatchee Experimental Station presented the results of three years of investigation on the use of calcium arsenate for codlin moth control. The paper was a summary of what is probably the most comprehen-

sive investigation of this subject that has ever been made. Associated with Mr. Marshall in this work was Dr. Kermit Groves, assistant chemist of the main experiment station. These investigations were undertaken in the attempt to find some substitute for lead arsenate that would not involve the troublesome lead residue problem, and which might actually be less costly than the customary lead arsenate sprays or their various combinations.

Previous to this work, most investigators had found that calcium arsenate was not particularly effective for the control of the codlin moth, although it had been used with success in eastern Canada. Because it had generally been found less efficient than lead arsenate, it was thought that calcium arsenate was less toxic. However, Marshall came to the conclusion that calcium arsenate does not lack in toxicity, and that failures to control worms are due to the fact that arsenic deposits have generally been more difficult to maintain throughout the season with calcium arsenate than with lead arsenate. In other words, more of the efficiency of lead arsenate is due to the fact that it adheres much better to Apples during the season, and affords protection from entering worms over a longer period than any other commonly used insecticide.

Real progress in this field of investigation would not have been possible without the aid of the chemist. Chemical aid for entomological research has been characteristic of our studies in pest control ever since the Wenatchee Valley Traffic Association provided the services of an experienced chemist, C. D. Dolman, who worked with Anthony Spuler in his early investigations on arsenic deposit and codlin moth control. Under Marshall's direction, with the cooperation of Dr. Groves, two graduate chemists, made more than

800 separate analyses

of arsenic deposit from the sprayed plots of from Apples sprayed with various experimental mixtures. Not only this, but these same men took part in the spray operations in the two experimental orchards utilised in 1935. With this chemical aid, reinforcing as it does, step by step, the development of various spray combinations during the season, we obtain a far more adequate conception of the real problem.

Hand in hand with chemical analyses have gone regular observations of fruits and foliage during the season, because the investigator must be always on the lookout for combinations which cause injury to foliage which may be wholly impractical on that account. Here again we have the help of the horticulturist and the plant physiologist, trained as these men are in the ability to recognise leaf and fruit injuries of various kinds, and to distinguish spray injury from that due to half a dozen other factors.

Following the three years of study of various combinations at Wenatchee, there is reason to believe that calcium arsenate may be utilised for light, and even moderate infestations in the irrigated Apple districts of eastern Washington. Further tests are needed to develop a combination that will adhere to sprayed Apples late in the season, and assure a high arsenic protection that will withstand the continued attack of late entering worms.

Foliage injury accompanied the use of many of the early combinations, and it was soon evident that calcium arsenate could not be safely used with many materials, even though these same materials have served good purpose to increase the efficiency of lead arsenate. Marshall, in his talk at Wenatchee, listed the

*Are these
fellows
getting most
of your
fruit?*

There is no doubting the fact that the loss from Codlin infested fruit represents an enormous figure every year. Many a grower, literally speaking, has to "cast his pearls before swine," and a considerable proportion of his crop used up in this way means a big hole in the yearly returns.



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SPRAYING FOR INSECT PEST AND DISEASE CONTROL (cont.).

following as materials with which calcium arsenate should not be used: (1) alone, (2) with fish oils, (3) with vegetable oils, (4) with ordinary colloidal spreaders, (5) with ordinary soaps, (6) with hydrated lime, (7) with oleic acid, (8) with mineral oil emulsified with soap, (9) with mineral oil of low sulfonation test.

Calcium Arsenate for Light Infestations.

Where arsenic deposits are equal, calcium arsenate has proven equal to lead arsenate. Because three pounds of calcium arsenate (per 100 gallons) was not sufficient, it was necessary to increase the calcium arsenate to four pounds. In order to prevent injury, zinc sulphate was added, this having proven superior to other materials in checking damage which ordinarily follows the use of calcium arsenate. The most feasible combination was that of calcium arsenate four pounds, zinc sulphate one pound, calcium hydrate two pounds, in 100 gallons of water. Commercial calcium arsenate can be purchased for about 4d. a pound, zinc sulphate (23 per cent. zinc) for about 2½d., and calcium hydrate (special superfine high calcium) for about 1d. This combination, out of many tried, has stood up as one in which control was equivalent to lead arsenate, and foliage injury definitely eliminated. In fact, on plots where zinc sulphate was applied, the foliage was even better than on corresponding lead arsenate plots that served as checks. The use of the zinc compound seemed actually to stimulate the trees. Last, but not least, there is no lead residue.

There are, however, certain disadvantages to this calcium arsenate combination. In the first place, it does not adhere so well late in the season during the time Apples are subject to second brood attack. Chemical analyses show that protection in terms of arsenic per square inch of fruit surface was 28% less in the case of the calcium arsenate combination as compared to a lead arsenate-fish oil spray. Again, it is particularly difficult to maintain a satisfactory spray deposit of any kind on large Apples such as Romes.

In regions where the two spotted mite is injurious this combination is, of course, of no value to combat mites. On the other hand, the 4:1:2 mixture may be used immediately following sulphur sprays for mites and according to Marshall is compatible with sulphur of the so-called colloidal type. One fact must always be kept

in mind regarding this material; that calcium arsenate cannot be expected to stop the worms where lead arsenate has failed to do so.

Calcium Arsenate for Moderate Infestations.

For moderate infestations of codlin moth the calcium arsenate-mineral oil combination has afforded good results. In fact, the addition of mineral oil alone appears to check foliage injury. Most of our investigations have had to do with a combination in which the mineral oil was used at the rate of one-half gallon per 100 gallons of spray mixture, calcium arsenate, 3-100. It may be desirable to utilise four pounds instead of three, in order to insure somewhat higher deposits.

In the Wenatchee work the use of a medium summer oil (70 viscosity) at this low concentration throughout the season has not resulted in injury during the three-year period. It may be further desirable, as indicated in Marshall's work, to add to this calcium arsenate-mineral oil combination one-fourth pound of zinc sulphate and one-half pound of calcium hydrate to 100 gallons of spray mixture, in order to entirely eliminate danger of foliage injury.

For Severely Infested Orchards.

The problem of combating the codlin moth under conditions of severe infestation is one of the maintenance of a film type of deposit on Apple surfaces throughout the season in sufficient amount to kill practically all larvae that attempt to enter.

Attempts to build up high uniform deposits on Apple surfaces with lead arsenate have been successful, especially when triethanolamine oleate is utilised for this purpose.

It is possible that some similar combination may be discovered that will serve to build up calcium arsenate deposits in a similar fashion. In fact, Marshall has already accumulated some information that points in this direction. Until further investigations have been carried out it certainly is unwise to attempt to use calcium arsenate where control is difficult, even with lead arsenate.

Apple growers should remember that the annual rainfall in the heart of the Wenatchee districts is less than nine inches, a factor which doubtless has much to do with the comparative freedom from foliage injury when calcium arsenate has been used. During the spray season May 1 to October 1 (November to April), the average precipitation amounts to only 2.18 inches. Results with calcium arsenate in a region of little rainfall such as this, are likely to be altogether

different in apple growing districts, where several inches of precipitation ordinarily occur during the six weeks immediately previous to Apple harvest.

Increasing Lead Arsenate Deposit.

Along with the investigations on calcium arsenate under way at Wenatchee have been conducted other studies concerning ways and means of increasing the efficiency of lead arsenate by building up more uniform and greater deposits on the fruits. Studies of this kind were initiated by Spuler in connection with the oil spray investigations, and were concerned with both mineral oil and fish oil. Spuler found that dogfish oil, which has a rather high free fatty acid content, was more efficient in maintaining arsenic deposits than other fish oils. This led to the idea, advocated by C. D. Dolman, chemist of the Wenatchee Traffic Association, that oleic acid might be added to fish oil to further increase arsenic deposits. In 1932, F. E. DeSelle used a combination of this kind in a Grant County, Washington, orchard, with an unusual degree of success. High arsenic deposits were obtained, and it was feared that these might be difficult to remove.

Again, in the experimental orchard at Wenatchee in 1933, high deposits were built up in first brood applications, when oleic acid was added to mineral oil applied to McIntosh trees, unusually wormy in previous years. Where no second brood applications were made, the deposit at harvest was 94 micrograms per square inch. Where two second brood sprays were made, using fish oil instead of mineral oil, the deposit was 220 micrograms per square inch.

Use of Triethanolamine With Lead Arsenate.

In 1934, Marshall included in his plots the use of triethanolamine, a synthetic organic chemical, which has in recent years found use in many industrial applications. This material has, in fact, developed from a laboratory curiosity to a commercial produce in a short time.

Triethanolamine is particularly well adapted for use in emulsions, and on this account serves to improve the quality of the film of lead arsenate when applied to the surface of an Apple.

Commercially, triethanolamine is used as a scouring and wetting agent in disinfectants and deodorants, and may also be used in shampoos and hand lotions, for leather dressings, automobile polish, and even in shaving creams and cosmetic creams. According to the chemists, triethanol-

amine is said to combine the properties of glycerine and ammonia in the same chemical compound, being a viscous, hygroscopic liquid of high boiling point, readily soluble in water, like glycerine, yet also an organic base, easily combining with acids, as does ammonia. In other words, the use of triethanolamine with oleic acid, in the proper proportions, forms a soap which is very nearly neutral in reaction.

Worm Control With Heavy Deposits of Lead Arsenate.

A striking case of the reduction of codlin moth infestation was encountered in the Kratzer orchard at Wenatchee in 1935. This orchard is composed of some 4½ acres of 30-year-old trees in vigorous growth, although planted at present too close for the efficient application of spray materials. Heavy applications of lead arsenate and fish oil or lead arsenate and mineral oil in 1934 failed to check worm damage, and the infestation ranged from 50 per cent. in Winesaps up to 80 per cent. on Romes and Pearmain.

In this orchard 11 brands of lead arsenate were used, building up heavy deposits by the use of triethanolamine oleate and mineral oil. Five cover sprays were applied in one block, which ran clear across the orchard, the last application being made July 2 to 4 (January). These trees were drenched with spray material. Some of the large Pearmain trees received as much as 100 gallons per application. The plot represented an attempt to determine what may be possible with heavy applications of materials and high deposits of arsenic.

After the fourth cover spray, Pearmain Apples analysed 182 micrograms of arsenic per square inch in the tops of the trees; 220 micrograms at the bottom. After the fifth cover spray these Apples had on them 225 micrograms per square inch in the tops of the trees and 234 micrograms at the bottom. This degree of protection evidently persisted until harvest, even through the entire month of September (March), when temperature conditions were particularly favorable to worm attack. At harvest these Pearmain Apples analysed 92 micrograms per square inch in the tops of the trees; 102 micrograms at the bottom.

In spite of the fact that this orchard was very wormy in 1934, the owner packed out 79 per cent. of loose boxes in the case of Pearmain; 74 per cent. in the case of Romes. This is a high pack out for 1935 in this district.

Where five applications of the lead arsenate-mineral oil-triethanolamine



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Extract "BETTER FRUIT," U.S.A., February, 1934: "Idaho Spray Programme for Codlin Moth Control, 1934," by Dr. Claude Wakeland, Department of Entomology, University of Idaho. Experiments in the State for the past six years have shown that LEAD ARSENATE is the best, as well as the most economical insecticide that we have tested for Codlin Moth control. Entomologists are agreed that there is no substitute for Lead Arsenate that can be recommended to the public.

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**SPRAYING FOR INSECT PEST
AND DISEASE CONTROL (cont.).**

oleate combination were made in the Kratzer orchard, worm infestation was reduced to 7.7 per cent. on Pear-mains, 5.9 per cent. on Romes, 1.8 per cent. on Winesaps. Where mineral oil was restricted to first brood applications, and was not used after the beginning of July 1, lead residue has been reduced to .018 by use of tandem washers.

The cost of this material is high, and the use of excessive quantities runs up the cost of materials to £3/10/- an acre for an application.

We have every reason to believe, however, that once reduced to a minimum, the worm infestation may be held in check by the use of a spray schedule much less intensive in degree.

Too Much Lead Arsenate.

The problem of the possible effect of unusually large quantities of lead arsenate added to the soil year after year in orchard districts is one that is beginning to concern many an investigator. Certainly the addition of

a toxic chemical of this kind does orchard soil no good. According to some authorities arsenic may be broken down by micro-organisms and released. If this may be the case, and calcium arsenate may be developed to the point where it can replace lead arsenate, the problem of accumulations of lead arsenate in orchard soil will be greatly simplified. This much is certain, that the more we know about the various factors involved, the better we should be able to meet those problems as they develop.

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Oil Emulsions and Red Spider

Summary of Experiments in Tasmania

By P. H. Thomas and T. D. Raphael (Tas. Dept. of Agriculture).

IN RECENT years the popularity of oil sprays for the control of fruit pests has increased considerably, and the number of specially prepared oils on the market in Tasmania now approximates twenty. With such a variety, growers have recently found considerable difficulty in making their selection, and as a result of numerous inquiries at the Department it was decided to repeat the laboratory tests carried out in 1932 and 1933, using all at present available products and applying them at various strengths.

The technique of the experiments was altered in accordance with the result of preliminary trials. Sections of wood about 12 inches long, thickly studded with the eggs selected, were taken and suspended on a line and sprayed thoroughly. This method was considered more reliable than the dip-

ping process used in 1932, as it was found that, in spite of rapid agitation, excesses of oil might be deposited on the wood sections, as they were withdrawn from the solution, this being particularly prevalent with quick-breaking emulsions under certain water and temperature conditions.

Sections from two varieties of Apple only (viz., Sturmer Pippin and Delicious) were used, the former carried mainly eggs of *Bryobia praetiosa*, whilst the latter included a proportion of *Paratetranychus pilosus* eggs. Where close comparisons were desired comparable sections of wood were employed.

The following samples were supplied for the test by the various companies and agencies dealing in these products:

- I.—Shell Red Spray.
- II.—Shell White Spray.
- III.—Shellicide.
- IV.—Shell Prepared Crude.
- V.—Gargoyle Red.
- VI.—Gargoyle White.
- VII.—Gargoyle Pale.
- VIII.—Gargoyle Prepared Crude.
- IX.—Neptune "A."
- X.—Neptune "C."
- XI.—Neptune Heavy Base.
- XII.—Neptune White.
- XIII.—Neptune "Clarifol."
- XIV.—Neptune Prepared Crude.
- XV.—Volck.
- XVI.—Kleenup.

Wood sections were treated on the 21st of August, the strengths used being in accordance with the manufacturers' instructions, together with variations designed to ascertain if any alterations were desirable.

Both species of spider commenced to emerge at the end of the first week in September, and could be found in quantity on the untreated sections by the end of the second week. By the end of October, as far as could be ascertained, practically all viable eggs had hatched, the proportion being approximately 75 per cent. of the total deposited. At this period the untreated sections were so heavily infested that many of the first leaves were shrivelled and falling.

It is not proposed to enter into the merits of each particular spray in this summary, but rather to generalise on a few outstanding points brought out by these tests.

(1) In the first place, prepared crudes were less effective than the standard prepared oils used at similar strengths, but produced reasonable control used at 1-12.

(2) Manufacturers' recommendations were on the whole too weak for really effective control, 1-15 being the weakest at which good control was achieved under the conditions of the present tests.

(3) Oil and lime sulphur combinations at the recommended strengths produced disappointing results, though it is possible that had the applications been made some weeks later the eggs might have been in a more vulnerable condition.

(4) The heavier oils gave a better control than others used at the same strength.

(5) Several of the mayonnaise types of emulsion produced disappointing results.

Recent research work in America has served to emphasise the efficiency of quick-breaking emulsions; in other words, it is not always the oil emulsion which mixes most easily with water, or remains longest on the tree, covering the eggs with an effective film, that provides the best control.—Tas. Journal of Agriculture.

BLACK SPOT CONTROL

Interesting Tests in U.S.A.

Studies on black spot (*Venturia inaequalis*) and spray materials for its control in the Hudson Valley (U.S.A.), were carried out by the New York Agricultural Experiment Station at Geneva, N.Y., and form the subject of Technical Bulletin No. 227 of the Cornell University, U.S.A.

Full details and charts are given in this bulletin.

Readers will note that the months mentioned deal with Northern Hemisphere conditions, and the corresponding six months difference should be allowed for under Southern Hemisphere conditions, i.e., June in U.S.A. would be December in Australia.

A summary is as follows:-

Seasonal development records of the Apple scab fungus (*Venturia inaequalis*) during the years of 1930 to 1934, inclusive, in the Hudson Valley indicate that ascospores may be discharged over a period extending at least from the middle of April (host in early delayed dormant stage) to the last week in June (terminal growth of host complete). The incidence of scab inoculum, frequency and duration of wetting periods, and temperature, particularly in the latter part of the season, are the essential factors in determining the first major (usually occurring during May), and last primary infection periods, and consequently the value of any given individual spray. Commercially, the pink, calyx, 10-day, and codlin moth (mid-June) sprays have been the most important.

Extensive tests have been made of the effectiveness and desirability of the more promising sprays containing lime-sulphur, wettable sulphurs and the like, sulphur dusts, and copper materials, and their use with arsenicals. Emphasis has been placed on adhesiveness, scab control, injury, finish of fruit, the residue problem, and the effect of sprays applied during bloom.

Spray materials used to control scab can be classified generally into those that are protective and eradica-

tive, such as lime-sulphur and, to a lesser degree, dry lime-sulphur; and those that are merely protective, such as wettable sulphurs, sulphur dusts, and copper sprays. When timely applied wettable sulphurs have given satisfactory scab control, but when untimely applied serious scab has developed. More frequent application, as compared to lime sulphur, would seem desirable. The most satisfactory results can only be obtained by a diversified programme due to the fact that each material has its own merits and limitations. Choice of material depends on the incidence of scab, the relationship of the last infection period to the stage of host development at the time it is to be applied, weather, variety, time of year, and general orchard practice.

Adhesive studies indicate that wettable sulphurs and sulphur dusts may give less than, as much as, or more sulphur residue than lime-sulphur depending principally on the rates of application and the concentrations of the material used. The percentage of fine sulphur in a given material is obviously the major consideration in determining its effectiveness and the concentration at which it should be used. But thoroughness or frequency of application, rainfall, and varietal, leaf, and fruit characteristics and rate of growth must be considered.

Texture of the Apple cuticle and rate of growth are vital considerations in the arsenical residue problem. Amounts of arsenic retained on fruit varied with the different fungicides used. The material that leaves the least sulphur residue on the fruit may leave the greatest arsenical residue, and vice versa.

Although laboratory tests indicate that sulphur and copper are toxic to Apple pollen, the practice of spraying during the bloom for scab control appears commercially feasible provided one (at most two) good pollution days have occurred prior to spraying.

The Codlin Moth Problem

Are Lead Arsenates Satisfactory?

Moth-Flight Warnings by Departmental Officers Suggested.

The Editor, "Fruit World." Sir,

Are fruit growers satisfied with the methods for the control of codlin moth, and could those methods and materials be improved? Arsenate of lead has been for some considerable time the recognised spray for codlin moth. When the grub is bad, it is common for growers to blame the poor quality of the arsenate, but have the growers any justification for doing so? One grower sprayed every fortnight, and then had 30 per cent. of grub. The Department of Agriculture fixes a standard for manufacturers of arsenate of lead to comply with. Growers are not chemists, but raise the point of whether that standard is high enough. Some arsenates are finer, and hold in suspension better than others, but is there any standard of degree of fineness, and why should not arsenate be in colloidal form? An official of the Dept. of Agriculture, in an article in the "Fruit World," said there is no reason why arsenate of lead should not be that fine that it would not need a spreader, regulations should be framed to compel manufacturers to produce such arsenates.

Most growers spray to a timetable, generally every three weeks, but the question arises whether this is the most economical way, as spray is applied when no moths are about, as during a cool spell. A better way perhaps would be to lengthen the periods and put on extra sprays when the moths are plentiful. The Dept. of Agriculture could assist the growers if they issued warnings when the peak periods of moths were about. Each orchard inspector could have lure pots in four or five orchards in various parts of his district under his special notice, and when he noticed peak periods, could issue warnings to growers. These warnings could be published in the press, over the radio or the 'phone, and growers could pass the word round. An orchard inspector would be more com-

petent than a grower as he is a trained man.

Chemical bands are generally recognised as good, and if a way of preventing the birds pulling them off is found, should be made compulsory.

Some growers have been experimenting with white oil and nicotine sulphate sprays for grub control, they would be doing their fellow growers a service if they were to write to the "Fruit World" and give their experiences. We want a greater exchange of ideas and practices.

Yours, etc., G.D.
Ringwood, April 20, 1936.

[We have published in this issue the latest scientific advice from U.S.A., which we trust will be helpful. Our correspondent's letter is appreciated, and we shall be glad to publish the practical experiences of growers in dealing with this major problem.—Ed., "F.W."]

SOUTH AUSTRALIAN READER'S VIEWS.

Black Spot and Codlin Moth. Is the Strength of Arsenate of Lead Being Reduced?

Mr. H. O. Hannaford, of Belair, S.A., who recently designed a new subsoil plough, sends some interesting comments on the S. Australian fruit situation generally, thus:

"Growers are having a difficult time with export Apples, black spot being bad, especially with Cleos. The raising of the export standard is making the business almost impossible. Our Dept. of Agriculture is very strict, and thousands of cases have been rejected. Many growers feel they cannot grow fruit up to the standard and sell it for 3/- to 4/- per case. At least 2/- per case more is needed to make it pay."

"Codlin moth is a serious problem. Growers who had almost clean crops last season find this year's crops badly infected under an even heavier programme of spraying. Though the price of arsenate of lead has nominally been reduced, many growers find it necessary to use at least 1½ times the quantity additional to be anything like effective. The authorities should make the minimum quantity of arsenic per lb. of lead higher."

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New Zealand News and Notes

Apple Crops Disappointing :: New Zealand will not Fill Quota :: Embargoes are under Consideration :: Fruit Marketing Policy :: Local & Export Markets.

(By Our Special Correspondent.)

THE ONE TIME OF THE YEAR when news in the fruit business seems to be scarce is when the rush period of harvesting is in progress. Most growers are too busy getting the crop in to worry much about matters, which, although of major importance, can usually be left over for attention in the winter months. Meetings are few and far between. A few enthusiastic secretaries continue to deal with routine matters, but until the harvest is over meetings of growers are only sparsely attended.

This reminds us that at the end of May and early June the Provincial Conferences will be held, followed by the Dominion Parliament of Fruitgrowers, usually held in Wellington in early September, but which this year are to be held in July. This provides the yearly outlet for ideas, opinions, and the ventilation of grievances. We hear that the Export Conferences are to be combined with the usual Conferences, so that the industry can look forward to a busy day or two when the delegates assemble.

Apple Crop Disappointing.

Disappointing—this word is very descriptive of the Apple and Pear crop of 1936. Estimates are coming down weekly. Some have been more fortunate than others—perhaps fortunate is not altogether the right term, for undoubtedly the success of a few is due to good orcharding. Weather conditions have certainly been against the production of good fruit, and the 1935-36 crop year will go down as one of the most unfavourable seasons experienced for many years.

It is now obvious that New Zealand will not reach its quota. Quantities exported to the end of March are lighter than the three previous seasons, and 1935 was the lightest crop on record for many years. The position was recovered somewhat by the middle of April, when the principal district, Nelson, reached its 1935 figures. The probability is that Nelson will do three quarters of a million cases, but this will be well below original estimates.

Early reports from overseas show a reasonable return for the first shipments, but Cox's Orange Pippin are again reported as showing Bitter Pit, which to a certain extent is unexpected, as the fruit held locally is turning out of cool store in good condition, and more or less free from this usual trouble of the variety.

Embargoes.

Parliament has been too busy on the Reserve Bank Bill and Railway matters to worry very much about ordinary trade questions, but in the next month more should be heard of the Parliamentary Enquiry promised by the Prime Minister, Hon. M. J. Savage. Two petitions have been presented by the Cook Islands Native Producers, one for a Control Board, the other against control, but in favour of an enquiry. These matters are to be dealt with by a Parliamentary Committee, and at the same time those interested will have the opportunity of ventilating opinions on the present embargo on Australian citrus. The total value of all citrus imports into New Zealand from January to December, 1935, amounted to approximately £135,000. New Zealand currency excluding the Cook Islands, which shipped citrus valued at £26,000. Of this total Australia secured £73,000. The other important shippers were Jamaica, £20,000, and California, £36,000. In the months of January and February, 1936, the

importations amounted to the value of £15,000, of which California supplied £9000. The Australian portion is made up almost entirely of the South Australian orange shipments.

Empire Fruit Conference.

In our April notes we mentioned the possibility of New Zealand being represented at this important Conference by Mr. R. Paynter; this report can now be confirmed. Mr. Paynter sailed from New Zealand by the "Rangitata," on April 9. Mr. Paynter is an ex-Chairman of the Fruit Board.

Marketing Policy.

It is reported from Nelson that the Executive Commission of Agriculture, which recently made the enquiry into export fruit marketing, is to make a second report. Already there is speculation as to what this report will contain. It is anticipated that the all-important question of representation will be covered. The Fruit Control Act came into operation in 1925, and representation was more or less based on the export figures in the years previous to that date.

Since then changes have taken place, and some districts, such as Auckland, have become of more or less minor importance in the export trade, while Nelson's proportion of the total has slowly increased.

Taking a 5-year average, the Nelson district shipped 60 per cent. of New Zealand's total, and Hawke's Bay 20 per cent. Nelson has only two representatives on the Board, out of six, which is only one-third, as compared with its export of three-fifths. This second report will be awaited with considerable interest by growers. If representation is to be changed, fresh elections can be looked for. The present Government will be wise if it allows the industry to settle its own problems, and, providing each district gets representation according to its interests, the result of the election should definitely settle the present marketing controversy.

Fruit Board London Office.

Some consideration is being given to the appointment of an Inspector at the London end, who can also act as an understudy to the London Manager. One of the dangers of the New Zealand marketing system is that the distribution at the London end is handled by one responsible officer without an assistant—a dangerous situation for any business of the importance of the fruit export trade. Some safeguards are required, and this has been realised for many years.

Local Markets.

Considerable quantities of fruit have been booked for cool storage. With the improvement in economic conditions within New Zealand, this fruit may go into consumption at quite reasonable prices. There is a tendency among individual growers, particularly noticeable in certain districts, to neglect the export markets in favour of local. If a satisfactory return can be secured from local sales, the growers concerned cannot be blamed, as the fruit is under their own control, can be inspected at any time, and marketed accordingly. Cool storage costs are still comparatively high. Export marketing has many advantages; the advance provides a certain amount of income immediately the fruit is shipped, whereas with local storage some months must elapse before returns commence to become available.

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And Now

New Zealand's highest export season was in 1932, practically the middle of the famous slump. It is doubtful if this figure will ever again be reached. It would be interesting to know what effect the slump had on the total quantity shipped in these years. It is our opinion that the over-supply to the English markets in the years 1931-34 was entirely the result of heavy crops coinciding with internal adverse economic conditions, which influenced a greater quantity to overseas markets than would have been the case if conditions within the exporting countries was normal. Perhaps the introduction of quotas was not as necessary as we have all been led to believe.

TRADE WITH NEW ZEALAND.

N.Z. Minister Visiting Australia to Consider Citrus Embargo.

Apples May Now be Imported into Australia from Otago.

At the invitation of the Commonwealth Government, the N.Z. Minister for Agriculture (Mr. Lee Martin) is to visit Australia, and it is hoped that Mr. Martin, accompanied by the Director of Agriculture (Dr. C. J. Reakes) or his deputy, will arrive in Sydney about May 18.

The Acting Minister for Commerce (Mr. Thorby) stated that, after consultation with the States, it had been decided that the Australian Agricultural Council should meet on May 27, 28 and 29, in Canberra. Mr. Thorby announced that the Commonwealth had modified the embargo against New Zealand Apples by permitting the importation of Apples from the Otago district, which was free from disease. This was a reversion to the position that existed in 1924. The action, he said, was in the nature of a gesture by the Commonwealth.

SHOW AT PANTON HILL, VIC.

THE recent Panton Hill Show was held in good weather, and with a good variety of entries. Special awards were given for largest Pear (Mr. Dave Murphy, Junr.), and for the most successful exhibitor (W. T. Smith and Sons). A. Duff exhibited the best collection of apples.

In the plate section, varieties included Pomme de Neige, Stewarts, Rome Beauty, Five Crown, Jonathan, Yates, Delicious, Granny Smith, Statesman, etc., and L. Bartlett, A. Duff, S. Cracknell, F. Jones, W. Smith and Sons, J. Howard, and H. Masefield were the prize-winners.

Pears included Beurre Bosc, Packhams, Keiffer, Williams, and J. Howard and W. Smith and Sons took most of the prizes.

Other fruit on show were Quinces, light and dark Plums, and Lemons. For Tomatoes, E. Pill, A. Duff and D. Meehan were the main winners. A good show of vegetables was seen, including Turk's Cap, Pumpkin, Potatoes, Lettuce, Carrots, Parsnips, Beetroot, French Beans, Green Peas, and Onions. Winners included L. Hughes, M. Kennedy, A. Davies, F. Smith, V. Smith, Mrs. J. Muir and D. Meehan.

Flowers displayed at the show included Dahlias Zinnias, cut flowers, Gladioli, Roses, Marigolds, and those successful were C. T. Harris, C. J. Middleton, Mrs. E. Smith, and F. Smith. Champion Gladiolus (C. T. Harris), Champion Rose (W. Howard), and Champion Dahlias (C. G. Middleton and A. Cracknell).

The Show was officially opened by Mr. W. H. Everard, M.L.A., and Hon. W. Angliss, M.L.C. Judges in the first section were Messrs. J. M. Ward, J. Jordan and W. G. Gray; for jams and jellies Mr. H. Williams (Alphington).

CANNING AND JAM FRUITS

CANNED FRUIT EXPORTS.

January to March Returns.

The following exports from Australia from January 1 to March 31 have now been announced by the Canned Fruits Control Board. The figures represent dozens of 30-oz. tins, or equivalent.

Country.	Apricots.	Peaches.	Pears.	Pineapples.	Fruit-Salad.	Total.
U.K. . .	80,310	143,536	164,962	—	— ..	388,808
N.Z. . .	1,958	740	218	657	— ..	3,573
Canada . .	3,015	18,519	900	50	— ..	22,484
East . .	989	2,326	1,848	—	320 ..	5,483
Misc. . .	193	348	544	52	10 ..	1,147
Total . .	86,465	165,469	168,472	759	330 ..	421,495

POI IN CANS NOW.

Natives Becoming Can-minded.

As an indication of the development of the popularity of canned foods, no greater illustration could be conceived than is suggested by a report from the "Western Canner and Packer" that Poi, the staple food of the Hawaiian people for untold centuries, will shortly be available on the grocery shelves in canned form.

A complete canning plant for taro products, including ready-to-serve poi, will shortly be in operation in Honolulu. Research and experiments have been watched for over a year to determine if taro could safely be canned, and it has been proved conclusively that it can be processed and sold to the natives at a price which they can afford, and in an accessible and popular form.

SOYA BEANS.

Prospects for Export to India.

On his recent voyage to England, the Minister for Commerce (Dr. Earle Page) held a conference with a group of missionaries who are returning to India.

Mr. Esmeades, of Duxbury, Bengal, said that the Soya Bean was not largely used in India so far, but it had great possibilities. Australia could produce these Beans and should seek to enter this trade.

A little girl had done very well in the second grade, and was promoted to the third. On meeting her former teacher, whom she had liked very much, her first words were—"I wish you knew enough to teach me next year."

For Sale at Harcourt

FOURTEEN ACRES ORCHARD in Full Bearing.

Apples, Pears and Plums, and four acres grazing land; Also house and land situated approx. $\frac{1}{4}$ mile from orchard. Owner not now resident in State.

Full particulars available from agent for owner—

A. GUTHRIE
MARONG, VICTORIA.

Southern California by the following year to justify some cannery making a pack of this berry.

The propagator of the Boysenberry is Rudolph Boysen, superintendent of parks of Anaheim, California, from whom the berry gets its name.

NEWS AND NOTES.

A good selling season is predicted on the London market, according to present indications. Heavy shipments from California slowed up the market last month, and handlers kept off Australian fruits temporarily, but this condition eased. Our prices have been maintained.

The Peach pack will probably be down anything from 50 to 100 per cent. this year, but Apricots are well ahead, in fact, another record pack. Pears promise a record pack also, and over all the total pack for this year will probably be the largest on record.

With other industries, canners are watching the so-known James case now coming before the Privy Council in England. Actually, the application of Section 92 does not affect canned fruits quite as much as some other industries, but it will have some reflection upon distribution.

The Canada-U.S.A. trade treaty is more liable to concern Australian canned fruits, but fortunately, the preference allowed to Australia still allows us to compete with California on the Atlantic seaboard in Canada. Up to date Canada has ordered all the fruit that we can supply this year. Our varieties, sizes, etc., suit her market, and we are fortunate that we may be able to hold her trade in spite of cross-border treaties.

CALIFORNIA PACKS 16½ MILLION CASES.

Increase of 2½ Million over 1934.

The 1935 pack of canned fruit by California reached the enormous total of 16,457,852 cases, an increase of 2,695,566 cases over 1934. The main varieties included in the total were Apricots 3,164,452 cases, and Pears 12,602,912, of which over 80 per cent. were Clingstones. Plums, Figs and other fruits represented some 450,000 cases.

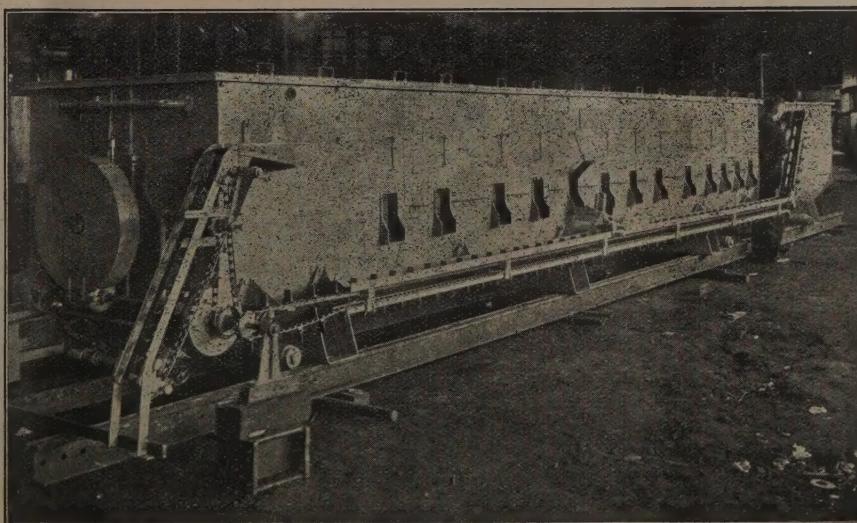
SHEPPARTON CANNERY EXTENDS.

Following a successful season, the Shepparton Fruit Preserving Company reports having broken all records by processing over 12 million cans of fruit this season. The development of the company, and the necessity to face increased supplies coming forward each year, has necessitated planning ahead, and the company has approved of an extension of the plant at a cost of £25,000 before the next canning season.

Additional space will be provided and an increased staff in the fruit canning, jam and storage sections, and in order to be ready for next season the work will be put in hand immediately.

The company reports that the quality of all fruit this season was high following favorable ripening weather conditions. Peaches were about the same in quantity as last year, but both Apricots and Pears far exceeded last year's supplies. Several records were broken and, in one case, a high record of 235,046 cans were processed in ordinary working hours on March 20.

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DRYED FRUITS DEPARTMENT

ESTABLISHING A VINEYARD.

At a recent meeting of the Lights Pass Branch of the S. Aust. Agricultural Bureau, Mr. G. Mader read a paper on "Establishing a Vineyard." Among other things, Mr. Mader stated as follows:—

Prepare the site on which it is intended to make the vineyard some time ahead of planting so that weed growth will be reduced to a minimum. In marking out the block, a wire is preferred to string, because the former does not get blown about with the wind. Keep the top soil from the holes separate from the subsoil, so that when planting the cuttings the

PRUNING SULTANA VINES.

South Australian Experiments.

The following report comes from a bulletin issued by the S.A. Department of Agriculture, relating to experiments undertaken in the pruning of Sultana vines in relation to crop returns after six years trials at Berri.

The results of a six years' competition on the pruning of trellised sultana vines shows that differences between total crop returns and methods of pruning of the competitors were too slight to be of much value, but the trials have emphasised certain aspects of good pruning practice. Prob-

ably the most important consideration is the relationship of fruiting wood to yield and vine vigor. On fairly large, healthy vines, it is suggested that six strong fruiting canes, carrying about 72 well-developed buds, should be sufficient to provide a 2-ton crop of dried fruit per acre. In any case, a smaller number of these strong fruiting canes should be left in preference to a larger number of weaker canes with smaller buds. On weaker vines, fewer fruiting canes should be left, and vice versa. Excessive pruning encourages vegetative growth at the expense of fruit, whereas too light pruning may increase crops in earlier years, at the expense of future vigor. Finally, pruning should be done carefully, to avoid such injury as may be made by saw cuts on the main arms of the vines.



A heavy yield of Grapes in the Mildura district.

surface soil can be placed around the roots of the cuttings. The holes should be 1 ft. square by 18 in. deep. Prune the cuttings back to two buds, removing as well all the top roots, leave the others about 4 in. long.

The Plough.

Mr. E. G. Lehrmann said ploughing was one of the most important operations in the cultivation of a vineyard or orchard. It is estimated that the cutting of a furrow with a sharp share requires about 60 per cent. of the total draught of a plough. If the draught of an ordinary double furrow plough is reckoned to be two tons, then cutting the furrows will account for about 25 cwt. Experiments have shown that a blunt share may increase the latter by a further 40 per cent., which would mean a further increase of half a ton.

The turning of the furrows with a short mouldboard in land of a sandy loam is estimated at 12 per cent. of the draught, but this may be increased by long mouldboards in sticky soil conditions. Knife coulters should always slant well forward, otherwise they catch the weeds and increase draught. Anything that can be done to shorten the distance between the horses' shoulders and the last mouldboard will very considerably lessen the draught. It is a mistake to work horses with chains that are too long, for this represents a great loss of power. Lightness of draught in a plough, however, is not the only point to be borne in mind.

If the property consists of heavy soil, it may be necessary to give consideration to an implement that will go into hard ground. Keep all shares tight. Socket shares are much to be preferred to the plate type in stiff soils. Short mouldboards, whilst being light in draught, do not make a good job in heavy soil, because they leave the ground too hollow. Long or medium length mouldboards with deep set coulters should be used in sand; they leave ridged furrows which materially assist in checking drift."

"S. Aust. Journ. of Agric."

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S.A. BOARD CONFERS.

Small Prune Problem Discussed.

The March meeting of the S.A. Dried Fruits Board, dealt extensively with replies received from Prune interests following the Board's questionnaire regarding the elimination of small Prunes from the pack.

The general view expressed was that the remedy for the small Prune was to be found in closer attention to cultural practices. The question of initiating a programme for improved cultural methods was held over, pending decision by the Government to the board's request to appoint a Research Officer to assist Mr. Strickland (Chief Horticultural Instructor) in co-operating with growers. It was noted that a conference of Agricultural experts was being held in Melbourne at an early date, which should clarify the position.

The question of Prunes in syrup and export quota thereon was the subject of correspondence between the Board and the New South Wales Board and it was noted that the matter of securing an amendment to the legislation, as recommended by the recent interstate conference, was now under consideration by the consultative committee.

66,000 Tons per Year.

Australia's Raisin and Currant production.

Although the average production of Raisins and Currants during the past ten years was 56,676 tons per year, made up of Raisins 41,500 and currants 15,176 tons, the last five years showed a rise in quantities to

Season.	N.S.W.		Victoria.		S. Aust.		W. Aust.		Australia.	
	R.	C.	R.	C.	R.	C.	R.	C.	R.	C.
1929-30 ..	4,170	542	39,183	8,911	10,562	8,094	652	1,332	54,567	18,879
1930-31 ..	2,364	425	22,377	7,834	7,825	7,588	651	1,738	33,217	17,585
1931-32 ..	3,043	497	29,702	7,832	9,234	7,820	797	1,428	42,776	17,577
1932-33 ..	4,909	670	42,568	7,814	12,434	6,390	704	1,536	60,615	16,410
1933-34 ..	3,922	721	33,962	7,476	12,480	8,018	595	1,323	50,959	17,538
Average 10 seasons			29,527	7,123	8,647	6,369	613	1,221	41,500	15,176
1924-34 ..	2,713	463								

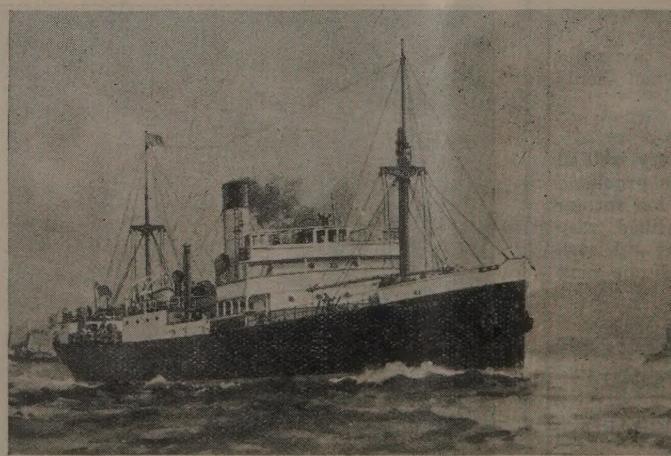
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CAPT. J. R. PATRICK, Governing Director.

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Cold Storage In Australasia

Gas Storage of Apples

An Aid to Refrigeration :: Doubling the Storage Life of Fruit

Only Sound Fruit Should be Stored — Correct Picking Maturity Essential — Store Fruit 2-5 Days After Harvesting — Gaslight Chambers Necessary — Control of Temperature, Humidity and Gases — Boxes and Stacking — Some Essential Equipment.

(By Drs. Franklin Kidd and Cyril West.)

Gas storage of Apples was discussed at a recent meeting of the Tasmanian State Fruit Board, with a request that the C.S.I.R. should pursue investigations into this subject as related to Tasmanian conditions.

Considerable scientific work has been done in England in this connection as will be noted from the bulletin hereunder republished, from Dr. Franklin Kidd, M.A., Cambridge Low Temperature Station, and Dr. Cyril West, M.A., of the Ditton Research Laboratory East Malling, England.

The bulletin is as follows:—

Gas Storage Described.

The term "gas-storage" is now used³ to describe a method in which control of the composition of the atmosphere in the store is the principal feature. Since control of the temperature is also essential, the method is more accurately described as "refrigerated gas-storage."

Prior to recent scientific investigation, it was thought that the closer the composition of the atmosphere in the store approached that of pure air, the better the conditions would be for the preservation of the fruit, and hence liberal ventilation was believed to be desirable. Experiments with many varieties of home-grown Apples have shown the error of this supposition. In an atmosphere containing more carbon dioxide and much less oxygen than normal air, not only is the life of the fruit greatly prolonged, but also its green color and firmness are retained to a remarkable degree.

Air consists of oxygen and nitrogen in the proportions 21:79, with traces of water-vapor and carbon dioxide and still smaller traces of other substances. Fruit, being living biological material, continually absorbs oxygen and gives off a practically equal volume of carbon dioxide, the process, in fact, being analogous to the respiration of animals. The atmosphere of any store containing fruit will therefore always tend to contain less oxygen and more carbon dioxide than normal air. There will also be present in the atmosphere of the store certain volatile substances produced by the ripening fruit.

To obtain the atmospheres most suitable for the preservation of the fruit, a gas-tight structure is necessary.

The proportions of the constituent gases in the atmosphere of the store are usually regulated simply by restricting and controlling the ventilation, but in some cases a scrubber for the removal of part of the carbon dioxide is also necessary.

The outstanding advantage of gas-storage is that the ripening of the fruit at any temperature is slowed down to about half the rate in air

at the same temperature. The life of the fruit in store is correspondingly twice as long.

Since the temperatures used are above the limit at which low-temperature breakdown will develop, trouble from this source is avoided. Low-temperature breakdown is a particularly serious disease, because it may develop rapidly during the marketing and distribution of Apples that appear to be in perfect condition on removal from store.

A specific effect of the carbon dioxide is markedly to retard the change in the ground-color from green to yellow. The almost complete retention of the green color of the fruit is of great importance with culinary varieties. Carbon dioxide also has the effect of preserving almost unchanged the hardness of the fruit.

The surface-eating Tortrix larvae that may cause so much damage to Apples in cold storage, not only directly by the lesions produced in the skin, but also indirectly by facilitating infection by rot-producing moulds, are quickly killed in gas-storage.¹

Perhaps the most striking advantage of gas-storage, from the point of view of the distributor and consumer, is the long life of the Apples after removal from store.

Apples intended for storage should be clean and sound, i.e., free from scab, punctures by insects, etc. An important but less obvious point is to keep the orchards and packing-sheds free from decaying fruit and other vegetable matter on which the spores of Apple-rotting moulds will be produced.

The fruit should be handled with the utmost care; individual fruits should be placed gently in the orchard-boxes rather than dropped or rolled from baskets or bags; and

during transport to the store every effort should be made to avoid shaking and bruising the Apples. No fruit showing any form of mechanical damage involving fracture of the skin should be retained for storage. In the case of the harder varieties, slight bruising is seldom followed by rotting.

Apples picked during warm weather should be allowed to stand in the open overnight, and placed in the store early, and as quickly as possible, the following morning, so that, by taking advantage of the lower temperature at night, the fruit may be more quickly cooled by the refrigerating plant.

Moisture or dew on the surface of the fruit when it is placed in the store does no harm.

Correct Maturity Essential.

Experimental evidence has confirmed the widespread belief among fruitgrowers that successful storage largely depends upon the fruit being gathered at the right stage of maturity. Although immature fruit may keep the longest, it tends to shrivel, and rarely attains perfection of color, texture or flavor. At the other extreme, if Apples are left on the tree until their characteristic aroma is present and the skin is beginning to pale towards yellow, their life, even in gas-storage, will be relatively short. It follows that a stage between these two extremes should be aimed at. At this stage the fruit can just be detached by gently twisting it on its stalk. This is a very simple test that may be recommended.

Prompt Storage After Harvesting.

The interval between gathering and storing is of critical importance for the preservation of Apples in gas-storage. Under ideal conditions, not more than two days should elapse between the gathering of the fruit and the sealing of the store. Under no condition should this interval exceed five days.

It is an open question whether Apples should be graded for size before they are placed in gas-storage. Since the advantages of gas-storage are to a large extent lost if the Apples are not subjected to the gas-storage conditions within a few days of gathering, it may be advisable, in order to avoid delay in loading the store, to postpone grading for size until after removal from store. Mechanical sizing of the fruit can safely be carried out after gas-storage, provided reasonable care be taken to avoid bruising.

After

three to four months' storage the gas-store may safely be opened, say, once a week for the removal of fruit for marketing, provided the correct temperature be maintained. At this stage the temporary loss of gas due to the opening of the store for the removal of fruit is not seriously detrimental to the fruit remaining in the store.

Size of Chambers.

In order to ensure rapid loading and sealing, to avoid mixing varieties, and to facilitate unloading, it is advisable to divide the larger gas-stores into two or more separate chambers, the size of the chamber being governed by the speed at which the grower can fill it with fruit. The most economical capacity for the grower on a large scale appears to be about 50 tons of Apples. For the average grower, it seems that a 30-ton chamber is the smallest economic unit. Smaller units can, of course, be used, and for a valuable Apple, such as the Cox's Orange Pippin, probably even 10 tons is worth consideration.

Constructing the Chambers.

A gas-proof lining is necessary if the atmosphere of the chamber is to be controlled. The construction employed at the present time is to line the roof and walls of the chamber with tinned or galvanised sheet steel of about 26 s.w.g. The metal sheets are nailed or screwed to wooden grounds with an overlap of about 2 in. The joints are sealed by inserting vaseline or some other suitable material before they are fastened. Compositions of suitable plasticity and impermeability to carbon dioxide are now on the market. It is usual to run over the overlapping joints with vaseline or other sealing material at the beginning of each season, but there is no direct evidence for the necessity of this precautionary measure.

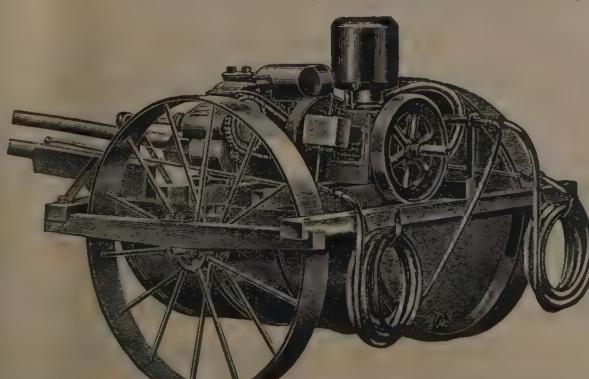
As a rule, the metal sheeting, in addition to being galvanised, is protected back and front by a dressing of anti-corrosive oil. For this purpose a number of substances have been tried, but their respective merits under practical conditions have yet to be determined.

The floor is usually of concrete. Its surface is gas-proofed by a coating of vaseline or of a proprietary composition that has the additional advantage of forming a firm, smooth surface that facilitates the thorough cleansing of the floor each season before loading.

For convenience in loading, and to ensure loading to capacity, the door should extend to the full height of the chamber. It is the usual practice to make this door in two or more vertical sections. These may be of 5-ply wood, metal covered on both sides, and are screwed down to wooden door-frames, the joints being sealed with a substance similar to that used for sealing the metal sheeting. A lightly-insulated outer door is useful, but not essential.

It appears that the gas-tightness of this method of construction depends largely on the care with which the work is carried out. Gas-stores are never completely gas-tight; in fact, the best store that has been tested showed a leakage amounting

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GAS STORAGE OF APPLES. (Continued)

to about 6 per cent. of its volume a day. Leakage of this order is no disadvantage, since it makes only a negligible difference in the time taken to build up the concentration of carbon dioxide required, after which ventilation must, of course, be given.

Strong winds may cause a serious loss of gas, and it is therefore advisable to have the store on the leeward side of the packing-shed or of whatever shelter may be available.

Care must be taken with the foundations, since any subsidence of the floor under the weight of the fruit will give rise to serious leaks at the junction of the floor and walls.

Controlling Oxygen and CO₂.

Correlated Control of Oxygen and Carbon Dioxide.—It has already been mentioned that the principal gases to be controlled are oxygen and carbon dioxide, and that the latter is produced from the former, volume for volume, by the respiratory activity of the fruit.

The rate at which carbon dioxide is produced is dependent upon the temperature; for instance, Apples produce approximately twice as much carbon dioxide at 60 deg. as at 40

deg. F. Consequently, when warm fruit is placed in the store, the rate at which carbon dioxide accumulates is quite rapid until the fruit has been cooled. The rate at which carbon dioxide will accumulate depends also, but usually to a lesser extent, upon the nature of the fruit (variety, maturity when gathered, etc.), and also upon the quantity of fruit stored. The smaller the Apples, the greater the weight that can be stored in a given space.

For some varieties of Apples (for example, Bramley's Seedling), the correct concentrations of oxygen and carbon dioxide are such as can be produced by allowing the fruit to replace oxygen in the air by carbon dioxide, and controlling the concentration of the latter by restricted and regulated ventilation with fresh air. In this way the excess of carbon dioxide is replaced, as required, by oxygen in the air. It will at once be appreciated that since the sum of the concentrations of oxygen and carbon dioxide must equal 21 per cent. (i.e., the concentration of oxygen in air), it is necessary to record only the concentration of carbon dioxide, and to control the atmospheric com-

position by this. In other words, with this method of operating the store, separate control of the oxygen and carbon dioxide is not possible.

Ventilation.—For a 50-ton chamber a single adjustable port about 1 ft. square, either in the door or in one of the walls, is more than sufficient for ventilation, but an opening of this size makes it possible to see the fruit and to withdraw samples for examination. Two ventilators at different levels set up a through draught, and act much more rapidly than a single opening.

In chambers where the cooling is by forced circulation

of air over a central battery of cold pipes sufficient ventilation can be provided by means of a pipe of $\frac{1}{2}$ in. bore, opening on the suction side of the fan. In this way the fresh air is continuously drawn into the chamber, well mixed with its atmosphere and cooled before it reaches the fruit. The amount of air entering the chamber must be regulated by a finely adjustable valve, and great care should be taken with the setting of the valve because the ventilating action can be extremely rapid, as compared with that of a port.

Independent Control of Oxygen and Carbon Dioxide.—Control of carbon dioxide and of oxygen by restricted and regulated ventilation alone will, as pointed out, provide the required atmosphere only when the concentrations of these two gases add up to 21 per cent.

For other mixtures, such as 5 per cent. of oxygen + 5 per cent. of carbon dioxide, some means of absorbing the excess of carbon dioxide in the chamber is required. For example, in reducing the amount of oxygen in 100 cub. ft. of air from 21 cub. ft. to 5 cub. ft., the fruit will produce 16 cub. ft. of carbon dioxide. Of this 16 cub. ft. of carbon dioxide only 5 cub. ft. are required, and the superfluous 11 cub. ft. must be removed. It is obvious that if this 11 cub. ft. of carbon dioxide were allowed to escape through the ventilating ports, and consequently to be replaced by oxygen from the air outside, the concentration of the latter in the chamber would rise above the prescribed 5 per cent.—in fact, it would be 16 per cent.—so that some chemical means of absorbing the excess of carbon dioxide inside the chamber is imperative. The concentration of oxygen is prevented from falling below 5 per cent. by careful ventilation as required.

Chemical absorption of the excess of carbon dioxide can be controlled, either by regulated circulation of the atmosphere of the chamber over a large quantity of the absorbent, or by introducing limited charges of the absorbent into the chamber at intervals, as required. At present (July, 1935), there is no commercial store fitted with apparatus for the independent control of oxygen and carbon dioxide, although several arrangements for absorbing the excess of carbon dioxide have been tried experimentally. The adoption of independent control of oxygen and carbon dioxide by methods that are now being explored, should not appreciably add to the cost of constructing the store. The cost of an absorbent, such as caustic soda, over a period of six months' storage would be of the order of £12 for a 50-ton store at the present time.

Humidity of the Atmosphere in the Store.—The humidity of the atmosphere in gas-stores for Apples has so far presented no difficulty in practice. Under commercial conditions it varies between 85 and 98 per cent. of saturation. The humidity is not so high as to lead to condensation of moisture upon the fruit, or to the growth of moulds on the trays or boxes. On the other hand, it is sufficiently high to prevent deterioration of the fruit through wilting during prolonged storage. The loss of weight which occurs is, of course, appreciable, although less than it would be in cold storage in air. In the case of Bramley's Seedling Apples it may amount to 5 per cent. after several months' storage.

The relative humidity of the atmosphere actually surrounding the fruit is the main factor determining the rate at which it loses water. Water is lost to the cold pipes whenever refrigeration is applied to the store, to the walls of the store when the outside temperature is considerably lower than that inside the store, and to the wood of the boxes or trays. The only one of these factors which lends itself readily to control is the last. Dry timber can take up a large quantity of water, and thus may have a desiccating effect upon the atmosphere around the fruit. An air-dry box weighing 6½ lb. after standing under cover during the summer and autumn, may take up about $\frac{1}{2}$ lb. of water after it has been used for holding Apples under gas-storage conditions for several months.

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GAS STORAGE OF APPLES. (Continued)

The timber of the boxes in which the fruit is stored should therefore be damp at the time of packing, and, moreover, the dampness should not be superficial. The empty boxes can conveniently be kept in the gas-store during the summer, and arrangements for maintaining the air damp can easily be made.

Volatile Substances. — Since gas-storage is a system of restricted ventilation, it follows that the volatile substances produced by the fruit will accumulate in the atmosphere. The question therefore arises as to whether this accumulation of volatile substances affects the fruit in any way. There is now much evidence that these substances do exercise a profound influence, and in excess are harmful to the fruit, causing superficial scald and lenticel-spotting.² It is a well-established fact that unless some means is employed to counteract these harmful effects upon the fruit, they may appear to a disastrous extent under the conditions of gas-storage. The procedure that has been found very satisfactory in practice is to wrap the fruits in paper impregnated with odorless mineral oil.

It is common knowledge that the amount of volatile substances produced by green, unripe Apples is very much smaller than that produced by Apples which are beginning to ripen.⁴ It is now also known that Apples are most susceptible to injury from the volatile substances when they are beginning to ripen.⁴ In accordance with these two facts, it has been found that when ripening fruit is placed in gas-storage with unripe, green fruit, a considerable amount of damage is caused to the latter, even when oiled wrappers are used.⁴

The information regarding the number and nature of the volatile substances produced by Apples is extremely inadequate, since there are no direct methods of isolating and measuring them. For the same reason there is little knowledge of the rate at which they are produced, of the effect of storage and pre-storage conditions on their production, and of the limits within which different varieties of Apples will tolerate them. Practical experience, however, has shown that all gas-stored Apples must be wrapped in oiled paper. Again, practical experience has shown that it may be disastrous to mix varieties in a gas-store, since ripening fruit of one variety will affect unripe fruit of another variety: for example, ripening Worcester Pearsains must not be stored with unripe Bramley's Seedlings. Lastly, if storage is delayed until the fruit is beginning to ripen, damage is likely to result.

Maintaining Correct Temperatures.

The capacity of the refrigerating plant must be sufficient to reduce the temperature of the fruit from 65 deg. to 40 deg. F., with an external temperature of 70 deg. F., within four to five days after the chamber is closed. From the point of view of preservation, the quicker the fruit is cooled after gathering the better. It is generally agreed, however, that the extra cost of the plant required to obtain more rapid cooling than that mentioned, outweighs the advantage gained in the better preservation of the fruit.

The correct amount of insulation is also a matter of compromise. Heavy insulation will permit the use of a smaller and less costly refrigerating plant in a hot autumn. On the other hand, with the refrigeration that must be provided to cool the fruit in the time specified, very little insulation, if any, is likely to be required during the main period of storage, i.e., late autumn, winter and early spring. In practice, if the walls of the building are thick (for example, an 18 in. brick wall), insula-

tion may be dispensed with, except in the roof. In new buildings, the plan usually adopted is to erect one or more double-walled wooden chambers inside a light weatherproof shell. The space (4 in.) between the double wooden walls is filled with granulated cork, and the chambers are lined with metal sheeting, as already described.

Two main methods of arranging the cooling surface, i.e., the cooling pipes or grids within the chamber, have been employed. In one, the cooling pipes are attached to the roof, with gutters fitted underneath to catch condensed water. In the other, the pipes are arranged in a central tower or duct through which air is drawn by a fan, usually designed so that the flow can be reversed periodically. The fan is driven by a motor, placed outside the chamber for accessibility and to avoid unnecessary heating. Leakage of gas along the spindle is prevented by a gland, which must be carefully designed, since any leakage at this point is serious on account of the pressure generated by the fan. The maintenance of the gland's packing in good condition is a point to be remembered.

The principal advantage of the fan

is to ensure uniform and rapid cooling of the fruit. When this has been achieved, the fan should be run continuously at a reduced speed, so that uniformity of temperature throughout the stack of fruit may be maintained.

The water that collects in the gutters attached to the overhead grids, or that is collected at the base of the cooling tower, is led out of the chamber through a water-trap. To be effective, this trap must be able to withstand a pressure of at least 1 in. of water. A water-seal of $\frac{1}{2}$ to $\frac{1}{2}$ in. has been found insufficient for this purpose.

Boxes and Stacking.

For several reasons it is more economical, and better results may be obtained, if the boxes in which the fruit is stored form part of the special equipment of the store, and are used for no other purpose. If this is done, the store can be filled to capacity, the boxes can be of convenient size and weight for handling when filled

with fruit, and it is easy to ensure that they are always clean, sound and not too dry.

In a store with forced air-circulation, the boxes should be provided with $\frac{1}{2}$ -in. cleats on all sides. This is to ensure that vertical spaces are left by which the air can flow through the stack without necessitating the use of too great an air-pressure. The cases are stacked solid on a grid of 3-in. crossed battens. The stack should reach to within about 6 in. of the roof. A space of about 2 in. is left between the walls of the chamber and the stack of fruit, and a gap is also left between the central duct and the stack.

The reason for leaving these spaces is to prevent excessive heating or cooling of the boxes nearest to the outside walls and the central cooler. Both the space between the walls and the stack of fruit, and that between the stack and the central duct, should be baffled about 3 in. above the level of the floor to prevent the greater part of the air short-circuiting through these paths of least resistance. The baffles generally take the form of wooden skirting round the walls and boards on the floor between the central duct and the stack of fruit.

In gas-stores where roof grids are used, a somewhat larger gap is usually left between the walls of the chamber and the stack of fruit. An open space should also be left in the centre of the stack, equivalent to about one tier of boxes.

Some Necessary Equipment.

Thermometers. — It is desirable to have at least three thermometers situated in different parts of a 50-ton chamber. The thermometers must be placed amongst the fruit inside the boxes or trays, so that the distant-reading electrical or mercury-in-steel types must be used. This point is stressed because it is the temperature of the fruit, and not that of the air, which must be controlled.

Gas-indicators. — It has been found that the composition of the atmosphere is so uniform throughout a chamber that only a single sampling point is necessary in each. It is important that the point chosen should not be near a ventilator. A pipe of $\frac{1}{2}$ in. bore should connect this point to a single header with separate taps for each pipe-line. The header is con-

nected to the gas-indicator, and is provided with pumping arrangements for clearing the pipe-lines and obtaining representative samples from each chamber. For the reasons already given it has so far been necessary to measure only the percentage of carbon dioxide, and the instrument most commonly employed for this purpose has been the katharometer. It is advisable to check the instrument on two or three occasions each season by chemical analyses of the gas.

Instruments for indicating oxygen, and suitable for commercial use, are being tested at the Ditton Laboratory, and prospective users are asked to communicate with the Superintendent for the latest information as to the most suitable type.

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⁵Kidd, F., and West, C. The Gas Storage of Fruit.—II. Optimum Temperatures and Atmospheres. Journal of Pomology and Horticultural Science. Vol. VIII., No. 1, 1930.

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⁷West, C. The Ditton Laboratory. Gas Storage Investigations. Proceedings of the British Association of Refrigeration. Vol. XXVIII., No. 2, 1931-2.

"Did you have the car out last night?"

"Yes, Dad; I took some of the boys for a run round."

"Well, tell them I've found two of their lipsticks!"

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Previous
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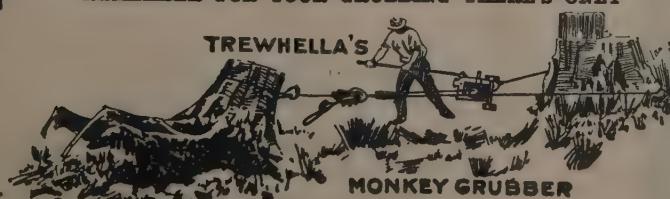
There are two speeds in the machine, as well as an automatic release that allows me to let off a strain, or as the machine will work in any position, it comes in for all jobs that would require a chain block. It is taken to the job on a pair of
wheels like a barn truck, and is rigged for work in a few minutes.

The ropes are in lengths that I find easy to handle, and each one is fitted with hook and loop couplings, so simple and absolutely IT for effectiveness. The makers have included a sturdy snatch block with a novel method of securing to the ropes, and also a fine type of firm gripping rope shortener. The latter makes it very easy to accommodate the lengths of rope to the tree or stump being pulled, and is quickly released from the rope. The combination of so many time and labor saving features makes the "Monkey" Grubber a superior grubbing outfit.

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Post Cooling of Fruit — Some Fresh Ideas

Fruit Placed in Post Cooler for Two Days (at Higher Temperature than Cool Store) Kept Longer than When Brought Straight into Atmospheric Temperatures.

By Willis J. Williams, B.Sc., F.C.S., Superintendent City Municipal Markets, Sydney.

THE COLD STORAGE of fruit has developed along scientific lines. A few years ago the idea was conceived in the mind of the writer that it would be a good thing if fruit, before it is placed on the market or sent to the consumer, after being in the cold storage room, was placed in a post cooling room for a period. This process has been termed "Post Cooling," and it has been proved by experiment to be a decided advantage.

Post Cooling, then, is this—produce which has been in the cold storage room is placed in the Post Cooler for approximately 48 hours, with the temperature in the vicinity of 55 to 65 degrees. The fruit is spread out in this room, and after being therein for the period stated the temperature

of the fruit rises to that of the room, which is in closer proximity to the outside temperature than the temperature at which the fruit has been kept in cold storage. It has been found by experiment that produce breaks down very much more rapidly when taken quickly from a low to a high temperature, so that the time spent in the Post Cooler is a very great advantage. The produce gradually assumes, over the time it is in the Post Cooler, approximately that temperature at which it will be kept until it is consumed. "Sweating," which is so common to all produce, especially fruit, when taken from a low to a high temperature, is prevented. The paper in which the fruit is wrapped becomes very wet unless post cooled; this dampness spoils the appearance

of the fruit and again it has been proved that this fruit does not keep nearly so well as that which has been through the Post Cooler.

Without the slightest hesitation it can be said that produce put through the Post Cooler will keep very much longer once it is placed on the market or handed over to the consumer, compared with produce that has not been post cooled.

One test was made with Peaches. The fruit was post cooled and it kept for three (3) days longer than that which had not been post cooled. This was a very conclusive test, because Peaches are so prone to ripen rapidly in ordinary temperatures. Several tests were made with grapes, as this fruit is easily affected by moisture, and a large percentage of moisture is deposited on the fruit when it is taken out of the store into the air. Further experiments were made with Oranges, and it was determined that those fruits kept very much longer after being placed in the Post Cooler.

The Post Cooler could be used as a room in which the ripening process could be gradually hastened, and there

is not the slightest doubt that it could be proved by experiments just how long certain fruits would take to ripen when placed in the Post Cooler. By this means a definite quantity could be taken out each day, whereas with fruit placed directly on the floor of the market, the ripening would be very much quicker, and the whole of the fruit would ripen at one period.

Once the fruit trade realises the advantage of Post Cooling, the practice will become general. It has taken a great number of years for the merchants to realise the advantage of scientific methods in the handling of produce. There is, however, a tendency to-day for merchants to make great use of the scientist, and, by so doing, they are assisting the public to get a better article. The life of fruit is not very long after it has come out of store, and any method that can be used which will lengthen this period will be one of great benefit.

The shipping companies should give consideration to Post Cooling shipments of fruit. The carrying temperatures of fruit vary from 32 to 40 Deg. Fah., and if these temperatures could be lifted for the last two (2) days before reaching port to a temperature of 60 degrees, or such temperature which may vary according to the size of the hold, a number of advantages would accrue. The fruit will be delivered direct to the market at a temperature approximating the local temperature, the appearance should be better, and the fruit would keep longer; this would be a further advantage to all concerned in the links of the long chain whereby fruit comes from a producer in Australia to a consumer in England.



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Soaking ... penetrating ... KILLING ... I.C.I. WINTER WASH destroys Green Peach and Cherry Aphid. Apple Capsid bugs, etc. in the egg stage, leaving the tree free of these pests for the spring growth.

The tar-oil used in I.C.I. WINTER WASH is guaranteed to be of the best high boiling neutral quality, and is converted into a creamy emulsion. It is not black in colour, and does not discolour the fruit. It is emulsified by a patent process which renders the emulsion stable even in the hardest water, and at the same time ensures an even distribution of oil over the trees in the form of a film which is resistant to adverse weather conditions.

An illustrated folder, fully explaining the use of I.C.I. WINTER WASH will be gladly sent free, and post free to any address in the Commonwealth.

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Interstate News & Notes



New South Wales

FRUITGROWERS' FEDERATION OF NEW SOUTH WALES

Farm Produce Agents' Act — Compulsory Waste Fruit Pits — Rail Freights — N.Z. Embargo — Export of Apples and Pears — Inspections — Spray Materials Act — Co-operative Societies — Plums for Brisbane — Financial Assistance to Growers — Interstate Conference — Re-organisation Proposals.

A meeting of the Board of The Fruitgrowers' Federation of N.S.W. was held at Sydney, 1st and 2nd April, 1936.

There were present General J. Heane (in the chair), Messrs. A. U. Tonking (Orange), T. A. Tester (Young), A. E. Herring (Batlow), K. H. Todd (Griffith), E. Ray (Bathurst), F. B. Mackenzie (Kurrajong), H. C. Matheson (Grose Wold), P. W. James (Dural), T. A. Haerse (Liverpool), A. S. Brown (Ourimbah), A. E. Lilliecrapp (Mangrove Mountain), A. J. Taylor (Warkworth), S. C. Martyn (Armidale), L. T. Pearce (Market Representative), and E. E. Herrod (Secretary). Apology from Mr. H. L. Anthony.

Farm Produce Agents' Act.

Consideration was given by the Board to suggested amendments of this Act.

Mr. James reported having attended the conference with the executive of the N.S.W. Chamber of Fruit and Vegetable Industries, and the Secretary reported having forwarded to each member of the Board a copy of the report of that Chamber, including the following recommendations:

"That the principle of a licensing board, comprising representatives of the Department of Agriculture, the Fruitgrowers' Federation of N.S.W., and the Chamber be confirmed."

"That a standard package for all vegetables for sale be made compulsory, and suggested standard bags to be 25 lb. and 50 lb."

"That the 2 bushel crate be eliminated from the list of cases that may be used for marketing fruit."

"That steps be taken to devise ways and means of permitting agents to purchase residue consignments."

"That the control of the City Markets be moved from the City Council and vested in a body comprised of representatives of the Government, growers and distributors."

It was decided to discuss the matters suggested by the Chamber before dealing with the report prepared by the Market Representative on the Act, a copy of which had been circulated to the Board members in January, and the following decisions were arrived at:

"That the Board approves of the principle of the formation of a licensing board."

Messrs. Todd, Mackenzie and Matheson voted against the motion, and requested that their vote be recorded on the grounds that the principle might be affected by the nature of the responsibilities of such a board.

"That the Board approves of the principle of the constitution of the licensing board being comprised of representatives of the Government, growers and distributors."

"That the Board considers that the recommendation with regard to the

standard package for vegetables be referred to the vegetable growers' associations."

"That the Board approves of the retention of the two-bushel crate."

"That the Board considers that agents should adhere to the Act, and not purchase residues of consignments."

"That the Board reaffirms previous decisions recommending that the control of the City Markets should be vested in a body created for the purpose, comprising representatives of the Government, growers, and distributors."

Consideration was then given to the Market Representative's report, and the following recommendations were adopted, as the policy of the Federation:

Section (7)—Bond.

That the Board supports the principle of the bond being fixed on the basis of turnover of the agents' business.

Section (19)—Destruction.

That the Board approves of the inclusion of a representative of the Federation amongst those having authority to approve of the destruction of waste production.

Section (23).

That the regulations made under Section (23) should prescribe in detail, not only the rate of selling commission, but the deductions that may be made from account sales.

Regulation (10).

That regulation (10) be amended by the deletion of the flat rate of commission.

Regulation (13).

That the attention of the Registrar be directed to non-observance of the provision of Regulation (13), requiring entries to be made in English, as it had been reported that Chinese agents make their notes in their own language.

Regulation (13a).

That growers be advised that the Board considers that it is in the best interests of growers to forward an advice note when consigning fruit to agents.

Regulation (13b).

That it be a recommendation that the regulation should provide for a record of sale at the time of sale being made on official stationery (not necessarily Government stationery), each sheet being numbered, and all sheets requiring to be accounted for.

It was decided to submit the recommendations that the N.S.W. Chamber of Fruit and Vegetable Industries, Potato growers and vegetable growers' organisations, and that a conference be subsequently called with the object of reaching agreement by the interests concerned, in order that a joint approach may be made to the Government, securing the adoption of desired amendments.

Compulsory Waste Fruit Pits.

Correspondence was received from the Department of Agriculture requesting an expression of opinion in regard to a suggestion that waste fruit pits should be made compulsory in deciduous orchards.

It was decided to suggest to the Department of Agriculture that the policy previously adopted should be carried out, and the construction of pits made obligatory in districts where necessary.

Rail Freights (Bulk Loading).

It was decided to ask the Railway Department to give effect to a reduction of rail freight to "M" rate on fruit consigned per goods train, leaving, however, the bulk loading conditions unaltered.

New Zealand Embargo.

Attention was called to a statement in the New Zealand newspaper, "The Dominion," published in Wellington on the 19th March last, in which the Prime Minister of New Zealand is reported to have stated that a parliamentary inquiry would be conducted into the fruit position generally, in which it was suggested that anybody interested in the position should come forward to submit their views to the inquiry.

It was resolved that the deputation appointed to wait on the Minister for Commerce be directed to ask the Government to send a responsible Minister to New Zealand, and that a representative of the growers should be appointed to accompany the Minister.

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REDUCES YOUR PICKING COSTS

Mr. Val Kerr, one of Victoria's leading orchardists, writes:—
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Export of Apples and Pears.

The President reported that serious complaints had been made by the Overseas Shipping Representatives' Association in respect to the conditions under which fruit intended for export this season was offered at ship side.

The President further reported that a special meeting of the N.S.W. Apple and Pear Export Association had been held to consider this matter, and a copy of the correspondence had been forwarded to each interested member of the Board.

Inspections This Season.

Reference was made by the President to the decision of the last meeting to send Mr. Ray to Hobart and Melbourne to report in respect to matters connected generally with the conditions under which fruit is inspected and tendered for export at ship side.

A report had been received from Mr. Savage outlining the conditions prevailing in the other States, and Mr. Ray had conducted correspondence with the main exporting districts.

Mr. Ray reported that, as a result of his inquiries, which he had reported subsequently to a meeting of the N.S.W. Apple and Pear Export Association, he considered that no good purpose would be served by making the suggested trip this year.

The reports were received, and Mr. Ray's suggestion that the trip be not made this year was adopted.

Export of Pears—Pear Case.

It was resolved that approval be given for representations to be made for the inclusion of the standard Apple Box in the list of cases that may be used to export Pears be referred to the N.S.W. Apple and Pear Export Association before further action is taken.

Spray Materials Act.

It was decided to draw the attention of the Department of Agriculture to the resolution passed at the last Annual Conference emphasising the necessity for the early introduction of the Fungicides and Insecticides Bill.

Co-Operative Societies.

It was decided to protest against the inclusion of growers' co-operative societies within the scope of the

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NEW SOUTH WALES—(Continued).

Income Tax Management Act, from which they have hitherto been exempt, as this will create hardship on fruitgrowers generally.

Plums for Brisbane.

Correspondence from the Committee of Direction was received, requesting the co-operation of the Federation in an endeavour to guard against a repetition of last year's experience, due to a glut of plums on the Brisbane market, caused through a heavy consignment from the Hills District coinciding with the peak of the Stanthorpe crop.

It was decided to refer the matter to the Cumberland District Conference.

Financial Assistance to Growers.

The President and Mr. Brown reported a conference, convened by the Premier's Department, with the Chairman of the Rural Bank, representatives of the Central Coast District Conference and the Board, following representations made by the Central Coast District Council for

financial assistance to growers in that district.

It was reported that the facilities previously given by the Rural Industries Branch of the Department of Agriculture, which applied only to wheat growers, had been transferred to the Rural Bank, and extended to cover fruitgrowers.

It was reported that under this scheme assistance would be given by the Rural Bank on the security of a lien taken over the crop.

Interstate Conference.

Correspondence was received from the Chamber of Fruit and Vegetable Industries inviting the Federation to be represented at a conference of fruitgrowers' organisations being convened by that Chamber on April 16. It was decided that the Federation be represented at the conference.

Reorganisation Proposals.

A lengthy discussion took place in respect to suggestions submitted to the Board for reorganisation, and a committee was appointed to prepare a scheme for the consideration of the forthcoming District Conferences.

Interstate Apple and Pear Grading Trade.

New South Wales Department of Agriculture is Ready to Gazette New Regulations.

RECENTLY the Australian Apple and Pear Export Council launched a proposal for improved interstate Apple and Pear marketing conditions, including revised grades and an advertising campaign.

This worthwhile effort was followed by the Victorian Fruit Marketing Association in convening an Interstate Conference on this subject. Details of the decisions arrived at have been published in the "Fruit World."

One of the benefits of this Interstate Conference was a better understanding among the States in relation to the all-important question of marketing.

The N.S.W. Dept. of Agriculture then held a conference with the Fruit Growers' Federation of N.S.W., when agreement was reached in relation to Apple and Pear grading regulations for local distribution, and a copy of the proposed regulations has been courteously submitted by the director of fruit culture, Mr. C. G. Savage, to Interstate Fruitgrowers' Association for their comments.

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The letter from Mr. Savage to the Victorian Fruit Marketing Association dated March 20, is as follows:—

Following upon the recent meeting of the Fruitgrowers' Federation of N.S.W. and this Department, the following agreement was reached in relation to the Apple and Pear Grading Regulations, and I would like to receive your comments upon same as early as possible, as we propose to gazette the regulations in this State at an early date:—

Apples "Extra Fancy" and "Fancy" as per present export standards, but with no size limit as to large-sized Apples, and adding varieties not now permitted to be exported. It was also suggested that in respect to "Fancy" and "Extra Fancy" grades that the tolerance of 10 per cent. should not appear in the text of the grade, but included as a foot-note at the end of the grades, and at the same time making it quite clear that the tolerance is allowed only to cover human error in packing.

It was also unanimously agreed that a grade between "Fancy" and "Good" be included for domestic use, and that this grade be called "Choice." This grade to read as follows (several members pointed out that they thought the difference between "Fancy" and "Good" grade was too great):—

"Apples described as "Choice" shall consist of Apples of one size and one variety, free from broken skins, and not seriously blemished or injured by any disease, but fruit slightly blemished by black spot fungus, caterpillars, hailmarks or limb rubs may be marketed, provided that the total area covered by such blemish on any Apple does not exceed the area contained in a circle having a diameter of one-quarter of an inch. Provided further that Apples of the minimum diameter of two inches bearing any signs of black spot fungus shall not be marketed. Russetting of the surface shall not be deemed to be a blemish if the skin is unbroken. The diameter of Apples shall not in any case be less than two inches."

"Good" grade was accepted.

The "Domestic" grade suggested by Victoria was rejected, and it was recommended that if this grade be

allowed to carry a stipulated blemish on each Apple with an area of $\frac{1}{4}$ in. in diameter or a number of stipulated blemishes the area of which do not exceed the area contained in a circle having a diameter of $\frac{1}{4}$ in., it would be acceptable.

"Factory" grade to stand. The question of a more suitable designation for this grade was discussed, and it was decided to ask the Department to suggest a more suitable name for this grade.

Grades for Pears.

Pears: The Pear grades as set out were accepted, viz:—

"Extra Fancy": Pears described as "Extra Fancy" shall consist of sound, clean, well-formed Pears of one size and one variety, free from broken skins and from diseases. Superficial blemishes from any cause may be permitted, provided such blemishes do not exceed 10 per cent. by number of the total fruit in any case, and provided that the total area covered by such blemish on any Pear does not exceed the area contained in a circle having a diameter of $\frac{1}{4}$ in. None of the Pears in this grade shall be less than $\frac{1}{4}$ in. diameter.

"Fancy": Pears described as "Fancy" shall consist of sound, clean, well-formed Pears of one size and one variety, free from broken skins and not seriously blemished or injured by any disease, but fruit slightly blemished by black spot fungus, or from any other cause, may be permitted provided that the total area covered by such blemish on any Pear does not exceed the area contained in a circle having a diameter of $\frac{1}{4}$ in. None of the Pears in this grade shall be less than 2 ins. in diameter.

"Good": Pears described as "Good" shall consist of Pears of one size and one variety, free from broken skins and not seriously blemished or injured by disease, but Pears slightly blemished by black spot fungus, or from other cause, may be permitted provided that the total area covered by such blemishes on any Pear does not exceed the area contained in a circle having a diameter of $\frac{1}{4}$ in. None of the Pears in this grade shall be less than 2 ins. in diameter.

"Domestic": Pears described as "Domestic" shall consist of Pears of one size and one variety, free from broken skins, and not seriously blemished or injured by any disease, but Pears slightly blemished by black spot fungus, or from other cause may be permitted provided that the total area covered by such blemishes on any Pear does not exceed the area contained in a circle having a diameter of $\frac{1}{4}$ in. None of the Pears in this grade shall be less than $\frac{1}{4}$ in. diameter.

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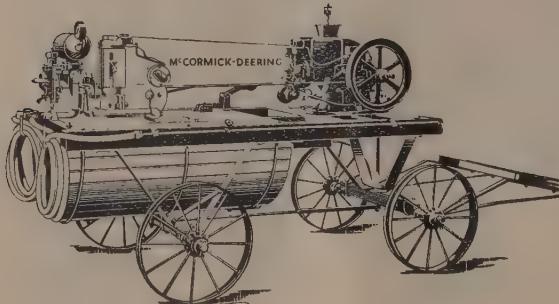
Effect on Interstate Trade.

The importance of this subject cannot be over estimated, when it is remembered that Sydney is the biggest market in Australia for fruit, and that the regulations gazetted in N.S.W. will form the minimum standard for fruit to be marketed in that State—whether from local or interstate sources.

:: :: ::

Comments from those interested are invited on this subject.

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Grapegrowing in the Stanthorpe District, Queensland

BY F. L. JARDINE, INSPECTOR OF PLANTS, STANTHORPE.

(Republished by courtesy of the Queensland Department of Agriculture.)

ALTHOUGH the grape vine has been in cultivation in the Stanthorpe district for over half a century, it is only during comparatively recent years that this branch of industry has come into prominence. To such an extent, indeed, is this so, that it shows promise of being, in future, the premier grape-producing region of this State.

History of the Industry.

As far back as 1873, when the settlers were engaged actively in the search for tin, the subject of fruit production had not claimed serious attention. Father Davidi, parish priest at that time, was a native of Italy, and was well versed in horticulture and viticulture. He saw the natural

advantages that the district offered for the cultivation of deciduous trees and grape vines. He saw far beyond the tin fields, and actually prophesied that one day the Stanthorpe district would be covered with orchards and vineyards like his native province in Italy. He even urged his congregation from the pulpit to engage in the cultivation of fruit trees and vines. To prove his faith in his own words, he planted a small area himself; and to this day there remain in bearing some of the original trees and vines. Bearing in mind Father Davidi's prophecy, it affords a great feeling of satisfaction, to those acquainted with the district, to review the progress that has been made during the past



Portion of a typical Stanthorpe vineyard in winter garb.

fifty years. The growers themselves, who followed that advice, have proved the soundness of Father Davidi's judgment, and have profited by their foresight, and the methods which they adopted in establishing and developing the viticultural industry in the Granite Belt.

Climatic Advantages.

Climate and soil are both naturally conductive to long life and the ripening of fruit. The district is endowed with other natural advantages so necessary for the successful cultivation of the grape vine, situated as it is over 3,000 feet above sea-level, with only a limited but well distributed rainfall of between 20 and 30 inches. The cold winters afford the vines a full measure of rest during their dormant period; while the dry, clear atmosphere during the summer months checks considerably the fungus diseases peculiar to the vine in coastal and more humid regions.

During summer the vineyards are naturally at their best, the lines of green foliage sheltering a wide range of some of the choicest varieties of grapes.

Progress of the Industry.

Although progress has not been rapid, it has been developed along sound lines. The vineyards generally present an orderly and well-kept appearance, being established on the same system—namely, the trellis with 10-foot avenues, the distance between the vines averaging 6 feet.

Thirty years ago the area under vines would probably not exceed a

hundred acres; while to-day the young vines and the vineyards in bearing would probably aggregate perhaps three thousand acres.

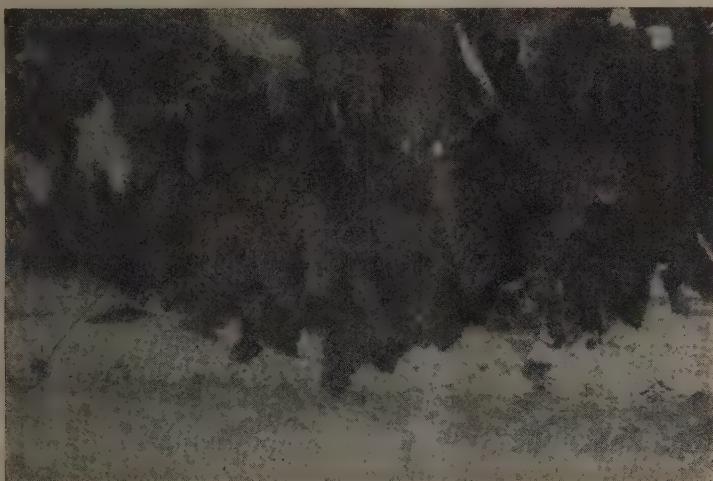
There is an increasing tendency towards the mechanisation of the industry. On the larger areas, the horse is being replaced by the tractor for purposes of cultivation; while power pumps have displaced the old-fashioned methods of spraying by hand.

Control of Disease.

Every precaution is being taken in the control of vine diseases. Growers realise fully that the devastating effects of the fungus enemies of the vines are not to be underrated. This is demonstrated by the systematic spraying and dusting campaigns carried out each year.

Varieties and Export.

Already trial shipments have been forwarded to Vancouver and to Covent Garden, as well as a trial shipment to the East. The results were encouraging, and provision is being made to send further consignments on a larger scale this year. It is hoped that in a few years the industry will have developed into a valuable addition to Queensland's export trade. Among the varieties cultivated are included Muscat, Hamburg, Waltham Cross, Purple Cornichon, red and Black Malaga, Servant, Red Hanneport, Flame of Tokay, Gross Coleman, Belas Blanco, Red and White Ladies' Fingers, White Syrian, Grand Centennial, Chaoch, and Cinsaut.



A four-year-old Gros Colman vine.

INTERSTATE APPLE & PEAR GRADING TRADE—(Contd. from page 18).

APPROVAL IN VICTORIA.

The Orchardists and Fruit Cool Stores Association is in general agreement with the foregoing proposed grading regulations for gazetted in N.S.W.—particularly the inclusion of the grade "Choice," which is lower than that of the "Fancy" grade.

On this subject Mr. W. P. Hutchinson, of Somerville, a member of the Executive of the Victorian Fruit Marketing Association, states that he believes the new grade to be known as "Choice" in N.S.W. is a good move, as Apples would thus be able to carry their correct grade designations. At the recent Interstate conference it was decided to recommend that the "Fancy" grade for Apples for export and local marketing be identical, but this Mr. Hutchinson states to be practically non-operative from the standpoint of the commercial grower, thus the inclusion of the slightly lower "Choice" grade in N.S.W. is welcome.

to be the best experienced in the district for years.

Around Orange, too, the pack out was better than expected. Crops were light in the Bathurst district, but somewhat better in the Blue Mountains. Around Kentucky there were rather heavy losses with Granny Smith, crops were light at Young.

On the Murrumbidgee Irrigation Area, Apple yields were generally heavy, but much fruit was lost through sunscald and other causes.

N.S.W. PRUNES.

Owing to defoliation by rust, the Prune crop at Young was reduced, and production was well below normal.

At Griffith, much of the D'Agen crop was very small and shrivelled, and in a number of instances robes were effected similarly; as a result, some growers lost heavily.

Reports from Leeton, however, indicate that a good sample was produced.



An early Bordeaux spray on young growth to check fungus diseases.
(Blocks from Queensland "Agricultural Journal.")

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APPLES IN N.S.W.

In their report, received early in April, the Dept. of Agriculture stated that crops were mostly harvested.

At Batlow, Apple crops were better than was anticipated; quality excellent, in fact, the season bids fair

The Pruning of the Apple in the Stanthorpe District

By H. St.J. Pratt, Instructor in Fruit Culture, Queensland Dept. of Agriculture.

THE OBJECT OF PRUNING is to make the tree bear regular crops each year of good-sized commercial fruit over as long a period of years as is possible. If too much bearing wood is left, the tree will be weakened by setting too heavy a crop for it to stand, and if too much bearing wood is cut out, then rank wood growth with a light crop of oversized and unsaleable fruit will be the result. To achieve the objective the tree must be kept growing and annual commonsense pruning is required, together with good cultivation and maintenance of the fertility of the soil.

If a tree is allowed to go unpruned, it would fruit right up the leaders, turn inside out with the weight of fruit, fail to put on growth, and bear a fairly large crop biennially, and its commercial life in the Stanthorpe district would be of very short duration. The tree would not die, but it would not pay. It should be borne in mind that fruit is really a sign of weakness; Nature says—"Reproduce, and then die."

A healthy tree must have plenty of foliage, and be kept moving as to leader and

lateral growth. The rooting system and the top are so much bound up with one another that, if the top is at a standstill, the roots cease functioning properly, and conversely anything that militates against the roots will adversely affect the top.

More fruit will always be produced on laterals than on spurs on the leaders. Laterals can be kept growing, but not so spurs, which multiply and get weaker every year; this makes spur pruning necessary, a very tedious process.

It will be found that, in pruning an Apple tree, practically every lateral will require some attention to keep the tree in a really healthy condition—Those of last year's growth will require shortening, and of those carrying spurs, some will require shortening back to a single spur in order to produce fresh growth after the fruit has set, to be shortened the succeeding year to keep the tree growing.

If a lateral remains unshortened it bears an Apple at the terminal bud, and then spurs back as far as the quantity of sap or vigor of the tree will permit.

With a twelve inch lateral it would probably spur back four spurs, and the remaining eight inches would become barren, and that lateral would be at a standstill; but if, on the other hand, the lateral was reduced to six or four inches according to its strength, the Apple at the terminal would be lost that year, but the next year the top bud would have put on a strong growth, the second bud a weak growth, the third a dart, and the next two or three buds would have developed into spurs, and the fruit would then be close to the leader or sub-leader with growth beyond the fruit.

Sap in a fruit tree always flows to the top or extremities—the top bud gets the most sap, the second bud less than the first, and the third less than the second, and so on; but it will have to be remembered that there is not sufficient sap to develop all the buds, and a good pruner, before cutting a leader or a lateral, unconsciously makes a quick mental calculation as to how many buds can be left so that practically every bud will develop. The length that can be left will depend on the vigor of the tree. Whenever a lateral or leader is cut it acts like a suction pump, drawing the sap, and so assists very materially in keeping the sap in circulation.

The aim of the pruner should be to get growth and foliage beyond the fruit. The leaders of the tree must be well defined, and nothing

APPRECIATION FROM NEW ZEALAND.

The Editor,
Dear Sir,

I enclose my cheque for subscription to the "Fruit World," which please credit to my account for future issues of your valuable paper, which I would on no account be without.

(Signed) "H.S.I." Henderson,
N.Z.

ing should interfere with their growth or enter into competition with them. It is better to make the tree proceed upward and slightly outward slowly with sturdy limbs well furnished with laterals, than to run the tree up quickly by long pruning with barren spaces devoid of fruiting wood.

Everything connected with a fruit tree, whether lateral or leader, will grow more vigorously vertically than horizontally.

In the shaping of a tree be careful not to develop too great a spread during the first few years prior to the tree's coming into bearing. The weight of the fruit will bring out the leaders considerably, and many a grower who has been proud of his goblet-shaped trees when four or five years old has been horrified to find them requiring props to prevent them turning inside out as soon as they bore a crop of fruit.

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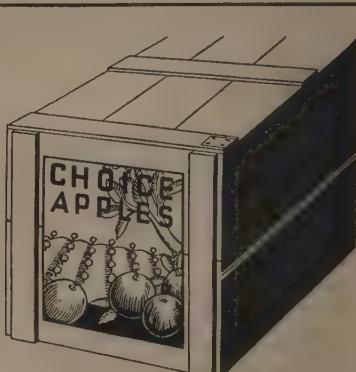
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An Interesting Tropical Fruit.

The Five Corner.

By S. E. Stevens, Northern Instructor in Fruit Culture, Queensland Department of Agriculture.

ATROPICAL fruit of Asiatic origin, the Five Corner is now distributed widely throughout the warmer regions of the world. Its susceptibility to damage by frost limits its growth to the tropics, but in these regions of Asia, Australia, America, and the Pacific Islands it is now frequently met with. Its introduction into Queensland dates back to about the end of the nineteenth century.

The tree is not very large, growing to an ultimate height of about 30 feet. The compound leaves, composed of two to five pairs of light-green leaflets 1½ to 3 inches in length, together with the clusters of small purplish flowers, and the yellow fruit give the tree a handsome appearance.

The flowers are borne in short racemes, arising from both the young and old wood. The flowering period extends over about nine months of the year, and the cropping extends over a like period, ripe and green fruit being present on the tree together at any time except at the very end of the fruiting season.

The shape of the fruit is responsible for the common name which it bears. Three to five inches in length, oval or elliptic in outline, the fruit is ribbed longitudinally with three, four, or five (usually five) prominent and sharply angled ribs. When cut transversely the cross section is star-shaped. The fruit is glossy, translucent, and light-green when young, and changes to yellow or yellow-brown when ripe. The skin is very thin, and covers a clear juicy flesh, rather astringent when green, but pleasantly acid and refreshing when ripe, and possessing a strong perfume.

Although no horticultural varieties are established, sweet and sour types are recognised, and both are to be found in North Queensland. The sweet type is usually eaten fresh, but the sour type is too acid to be pleasant in the fresh state, and is more suitable for jelly or pickles. The fruit of the sour type is usually larger than that of the sweet type.

The common name of the Five Corner in most other countries is Carambola, following the specific botanical name. In various parts of the Philippines it is also called Daligan, Balimbin, Garangan, and Malinbin. The Indian name is Kamranga, and in China it is Yung tau. The botanical name is *Averrhoa carambola*, L.

The preference of the tree is for a rich deep soil, but it will grow on sandy soil, or even on a very heavy one. A moist climate is preferable, but it is not an actual necessity, as is proved by its establishment in the dry climate of Northern India. Tropical temperatures are strictly necessary, however. When young, the tree is rather delicate, but given a warm, moist climate with a suitable soil, it quickly establishes itself and makes rapid growth.

Propagation is usually by seed, and is easily effected. Only a small percentage of seed appear to be fertile, however, and care is necessary to select well-developed seed for planting.

P. J. Wester, of the Philippines Department of Agriculture, has found that vegetative propagation may be carried out by shield budding. He recommends the selection of petioled budwood, ripe, smooth, and purple in color. The buds should be cut 1 inch to 1½ inches long.

The young trees may be set in the field during the periods between September and November or February and April, and should be planted 20 feet apart.—"Queensland Agricultural Journal."

Victorian News and Notes**RED HILL SHOW.**

At the Red Hill Horticultural and Agricultural Annual Show, opened by Mr. Tyner, M.L.C., there were splendid exhibits of fruit, vegetables, farm and dairy produce, etc. The Supt. of Horticulture, Mr. Ward, spoke in terms of high appreciation regarding the quality of the fruit.

The champion case Apples, wrapped, packed and wired for export was won by Edwards Bros. Edwards Bros. won many other prizes in this section. Other prizes in the case and tray section were won by W. J. Holmes, K. Cleine, H. Bowring, J. Erskine, Y. Wilson, R. H. Holmes, J. E. Roberts, Ray Parvis.

In the fruit section varieties of Apples were as follows:—Alfriston, Jonathan, Stewarts, Reinette, Rome Beauty, Delicious, Yates, London Pippin, Granny Smith, Esopus, Spitzenburg, Stone Pippins, Rokewood, and winners included B. J. Roberts, E. L. Trewhin, G. Rust, A. E. Thornell, K. Cleine, G. Laurissen, Miss P. Wright, N. Brown, W. J. Holmes.

Pears were also displayed and varieties were Packhams, Capiamont, Kieffers, Josephine, Broom Park. Prize winners were R. H. Holmes, N. Brown, W. G. Roberts, A. E. Thornell.

Other fruits were Plums, Peaches, Quinces, Lemons and Black Passion-fruit, and winners included E. L. Trewhin, G. A. Baudinette, A. E. Thornell, Miss P. Wright, G. J. Williams.

There was a good display of vegetables of all kinds. The principal prize winners were F. Moore, W. Cockhead, H. Bowring, H. Davis, Mrs. S. Flockhart, E. White and Son, J. White, A. Herbert, J. Wilson, and J. C. Williams.

The horse events were an attractive feature of the show.

EUROA HORTICULTURAL SHOW.

A good show of fruit and vegetables was displayed on April 3, at Euroa.

Prizes were given for Apples, varieties being Five Crown, Delicious,

Jonathan, Rome Beauty, Cleo., Stone Pippin, Dunn's, Granny Smith. Winners were A. G. Smith, G. Bryans, J. Mackrell, F. Roberts, Mrs. J. Mintern, T. Vidler. For collection of Apples, A. G. Smith was the prize-winner, and for collection of fruit, G. Charman was first. Other winners included Almonds—Mrs. G. Morgan, London Pippins, Stewarts, Granny Smith, Democrat, etc. The principal prize winners for Apples and Pears were A. J. Upton and A. C. Chandler: others included O. S. Footil (Lemons) and G. D. McArthur (Passionfruit). The show was opened by Lt.-Col. Knox, M.L.A.

A large display of vegetables was also arrayed. Exhibits included Potatoes, Tomatoes, Carrots, Parsnips, Red Beet, Butter Beans, French Beans, White and Swede Turnips, Lettuce, Turk's Cap, Vegetable Marrow, Water Melon, Celery, table and heaviest Pumpkin, Rock Melon, Rhubarb, Green Peas, Onions and collections of vegetables. Prize winners included:—E. Brown, W. H. Vidler, J. D. Brook, Mrs. Gilliland, T. Vidler, E. Simpson, Mrs. H. E. Smith, F. Roberts, E. Aldridge, L. Cann, and T. Broughton.

CASTLEMAINE.

At the Castlemaine Show at the end of March, a delightful display of flowers and homecraft goods was arranged.

The fruit display was capable of being largely developed from the nearby Harcourt district.

For dark and light Grapes, the first prizes went to T. A. Stewart, and second prizes to Mrs. J. Bennett. Lemons, Peaches, Quinces and Figs were also shown. Prize winners included B. Ford, A. Ford, Mr. Ware, Miss Liviny, Mr. Bertuch and G. Field.

There was a nice display of Apples displayed by the Young Orchardists' Club. In the competition for packing classes among school children, Harcourt and Harcourt North were the only competitors. The prize was for the Gerrard challenge shield, the first prize going to Harcourt North School, with Harcourt second.

Other competitors in the junior section were for Apple packing, with Jean Bertuch first and Ken. Warren second and F. Eagle third.

Competitions were also held for Apples, Jonathan, Dunns, Romes, Londons, Granny Smiths, and Delicious, and also for Josephine and Winter Nelis Pears. The prizes were distributed principally between Gordon Robins and B. Ford, other prize winners included Jean Warren and A. Ford.

Croydon: At the Croydon Flower and Fruit Show on March 21, the fruit exhibits, though small in number for such an extensive fruitgrowing district, were of good quality. Apples included first-rate Jonathans, London Pippins, Stewarts, Granny Smith, Democrat, etc. The principal prize winners for Apples and Pears were A. J. Upton and A. C. Chandler: others included O. S. Footil (Lemons) and G. D. McArthur (Passionfruit). The show was opened by Lt.-Col. Knox, M.L.A.

Fruit Tree Manuring.

Valuable Experiments in the Goulburn Valley.

EXPERIMENTS in fruit tree manuring have been and are being conducted in the Goulburn Valley at the orchard of Mr. C. R. Roper, Harkstead, Kyabram.

The tests so far deal with Puller's cling Peaches.

The four mixtures under test are:—

- No. 1.—10 lb. per tree, 2.2.1.
- No. 2.—8 lb. per tree, 1 & 1.
- No. 3.—6 lb. per tree, 2 & 1.
- No. 4.—4 lb. per tree super, straight.

The trees are about 12 years planted, and stand 20 x 20 apart, and are irrigated.

Groups of six trees treated with the various manures are replicated six times, and staggered about the orchard.

The complete year's programme begins with broadcasting a cover crop in March of 1 bush. each of Cape Barley and Peas, with 1 bag of super and ploughed in. On the bulk orchard—not under test—a bag of 1 & 1 replaces the straight super., as it is found the former grows a quicker and far more luxuriant cover crop.

Then, not later than August, the manures are broadcast by hand over the test plots, which are now (April 2nd) feet deep in cover crop and ploughed in.

The results so far show no appreciable difference between plots No. 1 and 2. Both have made phenomenal growth. Plot No. 3 comes a very poor second, and No. 4, with super. only, appears very sick.

The toll of fruit taken by Peach moth, brown rot, and rust, make it impossible to arrive at an accurate weight of fruit per tree this season, but the added bearing area on plots 1 and 2 indicates a far heavier crop next season than can possibly be carried by plots 3 and 4.

There is no apparent difference in the incidence of fungi or moth on the various plots.

Mr. Roper is an experienced fruit grower, and is to be congratulated on his enterprise. This points the way for tests under Government supervision, particularly in the Tatura property, which was purchased some years ago as an experimental orchard, but which is not operating as such.

THE MODERN EVE.

"Can you drive with one hand?" asked the girl in a gentle voice.

"You bet I can," replied the young man, eagerly.

"Then here's an apple," answered the sophisticated young creature.

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Colloidal Lead Arsenate

(Tested and proved at the Blackwood Experimental Orchard, S.A.)

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Owing to the extreme state of division it is only necessary to use 2 lbs. of the Colloidal product to 100 gallons of water in order to obtain the same results as either 2 lbs. of powder or 4 lbs. of paste.

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MID-MURRAY NOTES.

Short Drying Season — Grapes for Wine and Distillation Purposes — Special Irrigation — Citrus Growers' Deputation — Collapse of Vine Fruits — Drying of Pears — Visit of Governor of South Australia.

(By Our Special Correspondent.)

THE DRYING SEASON has been short this year, owing to the fact that crops have been light on account of unseasonal rains at critical periods, and the only fruit now remaining on the drying greens are small quantities of a few late Sultanas and some belated Lexias. The irony of the situation is that the drying season has been practically free from rain, constituting perfect weather conditions, and we have had little fruit to dry.

During the past two drying seasons crops were good, but as the weather was showery, dehydration had to be resorted to by every grower, almost

without exception, but this year the sun has done its duty in good style and dehydrators remain cold.

There will be only a small percentage of really first-class quality vine fruits from the South Australian irrigation areas this year, the greater bulk of the Sultanas being in the two and three crown class, which is the quality greatest in demand with the Australian public.

Currents will probably show a preponderance in the one and two-crown grades, but some good Lexias (dried Muscats) have been harvested. The latter variety has gradually been losing favor with the housewife, both

here and in England. In consequence of this, growers of the latter variety are not inclined to dry a very great quantity.

Judging from comparative sales in Australia and England, we find also a falling off in recent years of the consumption of Currents, in spite of the fact that throughout the last year, Currents have been offering in London at a consistently lower rate than Sultanas.

It seems that the fleshy seedless variety (Sultanas) has cut inroads into the Currant and Lexia trade. On the other hand, however, our Currents find a ready market in our sister Dominions of Canada and New Zealand.

The two distilleries operating in Renmark (Messrs. Angoves Ltd., and the Renmark Growers' Co-operative Distillery) have been busy for the past month crushing Grapes for wine and distillation purposes.

The greatest tonnage of any variety of Grapes crushed is the Doradillo, this variety being used chiefly for the manufacture of proof spirit and brandy, the brandy having established state-wide reputation. The Gordo

Blanco (or Muscat) is chiefly used in the manufacture of what is known in the trade as a white wine, this is fortified to a strength of about 33 per cent. This wine constitutes the bulk of exported wine from this area, and owing to the ready sales of this product, and a diminishing demand for this variety when dried, the bulk of the crop finds its way into the distilleries, which are also wineries. Other varieties used for the manufacture of red wines are Shiraz and Grenache, but besides the varieties above mentioned, there are only small quantities of Grapes grown for wine making, which cannot be considered of any consequence.

The special irrigation just completed has been availed of by nearly every settler in this area. It is pleasing to note that growers have realised this is an important irrigation, both for the planting of cover crops and to help in the maturation of the fruiting buds for the next year's crop. Some years ago there was not sufficient interest taken in a March-April irrigation to warrant the pumps coming into operation, but within the last few years a more lively interest in the function of the vine has brought about a big change in the attitude towards an irrigation at this particular time of the year.

In every irrigation area where diversified fruits are grown, each requiring different treatment, it is a difficult matter for the authorities to arrange a roster on an economic basis. In consequence of this, irrigations have often not been timed with sufficient consideration for the lesser fruits, such as citrus, and it has often happened that trees have suffered from lack of adequate soil moisture. A strongly headed deputation from the Berri and Waikerie area waited upon the Minister of Irrigation to put a case on behalf of citrus growers in these areas. The Minister gave the deputation a very favorable consideration and agreed to give these growers an irrigation whenever required, provided that they were prepared to pay the cost. It was pointed out that the loss was often greater than the cost of irrigation, and eventually a very satisfactory arrangement was arrived at.

Collapse of Vine Fruits.

Growers, particularly our soldier settlers, have been asking why the collapse of our vine fruits was greater this year than in previous years, and a great many theories have been advanced, one of which is: "Have we given our land too much nitrogen in the form of cover crops and artificial nitrogen so as to produce a soft fruit?" I do not consider this theory as a sound one, because of the fact that each summer rain this year has been accompanied by humid conditions for several days after the rain, which has the effect of more or less steaming the fruit and creating conditions favorable for a breakdown of the structure just at a time when sufficient sugar in the fruit allowed mould to develop. I am convinced that the breakdown is entirely due to unfavorable weather conditions. In opposition to the theory that the breakdown occurred because of excess nitrogen in the soil, I have noticed mould development in places where no artificial nitrogen has been applied, and no cover crops have been grown.

Our summer rains are usually followed by cool southerlies causing only slight damage, and it is 20 years since weather conditions similar to those which occurred this year, causing such widespread damage. As none of the soldier settlers were then fruit growing it is little wonder that they are looking for some cause outside their actual experience.

The packing sheds which process our fruit, have had a busy season

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Root Stocks for Cherry Trees

Tests in South Australia with Mazzard, Kentish and Mahaleb.

"Growers Now Generally Use No Other Stock Except Mahaleb for Sweet Cherries."

AT THE RECENT field day at the Blackwood (S. Aust.) Experiment Orchard there were discussions on many phases of fruit-growing.

On the subject of root stocks for Cherry trees, those in attendance were supplied with the abstract of an article on this subject by Mr. Geo. Quinn, as follows:-

A TRIAL TO DETERMINE the effect of four root stocks upon five sweet Cherry varieties (*Prunus avium*) was started in 1910. The four stocks were Mazzard (*Prunus avium*) and Mahaleb raised from seed, the Kentish or Morello (*Pcerasus*) raised from suckers or accidental stools, and a combination of Kentish double worked on Mazzard.

The five scion varieties: Biggareau Napoleon, Early Lyons, Early Purple Guigne, Florence (syn. Waterloo in S.A.), and St. Margarets were each represented by three trees on each stock. Data have been collected and recorded for 25 years, and although the nature of the layout, the fact that a few of the trees died in the first year or two, and certain other circumstances, such as depredations of birds among the fruits, preclude any very accurate quantitative analysis of tree performance, the evidence in several directions is sufficiently marked to be significant. The relative behaviour of the scion varieties was reasonably comparable in all cases.

As might be expected, there was practically no sign of incompatibility between the Mazzard stock and the scion varieties. Both Mahaleb and Kentish showed some lack of compatibility, but this was more marked as regards ultimate effect in the case of Mahaleb. At 25 years, the trees on Mazzard are still healthy, though not increasing in size appreciably.

Of those on Mahaleb, six out of 15 have died, and the remainder are showing more or less evidence of progressive dying back at the terminals. At the same time, it cannot be claimed that this stock has any appreciable dwarfing effect in the early years, as some of the trees at the time of their

deaths were among the tallest in the plot.

The Kentish rootstock, on the other hand, did have a dwarfing effect, and at the end of 25 years, the trees appear to have ceased increasing in size. Unlike those on Mahaleb, however, they are still in a fair state of health.

The use of the intermediate Kentish stem on Mazzard seems to have had no dwarfing influence, although stem growth at this point was restricted, and the performance of these trees more nearly resembles those on Mazzard.

Root excavation on a few trees showed both Mahaleb and Kentish to have a small root system, but in the former, where large roots died, the stock seemed incapable of replacing them.

No large roots of Kentish were found to have died.

Mazzard, with or without Kentish as an intermediate, had a larger system than the other two. Like Mahaleb, dead roots were again in evidence, but were in this case replaced by new ones.

The figures for the first seven years of cropping, though not conclusive, appear to show little difference between trees on Mazzard and Mahaleb, but a tendency for trees on Kentish and Kentish/Mazzard to crop less.

When, however, the whole 18 years' cropping are considered, Mazzard and Kentish on Mazzard, are shown to have given considerably more fruit than Mahaleb or Kentish.

The results of the trial tend to confirm the views of growers generally, who now use no other stock except Mahaleb for sweet Cherries.

PRETTY TOUGH!

"Why, this is roast beef!" exclaimed Bobby.

"Yes, of course it is," said his father. "Why?"

"Well, you said you were going to bring an 'old mutton-head' home for dinner," said Bobby. (Collapse of visitor.)



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TASMANIA

ORCHARD NEWS AND NOTES

Weather and Crops — Packing — Pest Control — School Packing Classes.

A SUMMARY of information received by the Chief Horticulturist (Mr. P. H. Thomas), from the District Orchard Inspectors, together with other information relevant to fruit culture is as follows:-

Weather and Crops.

Throughout the month rainfall remained well below average, the few points registered resulting from occasional showers which rarely penetrated the soil more than an inch, and dried off within a matter of hours. The following records will demonstrate the general conditions experienced in fruit-growing centres:-

District	Average rainfall.	1936 rainfall.
Launceston . . .	170	147
New Norfolk . . .	160	69
Bagdad	202	50
Hobart	174	81
Franklin	255	125

Such conditions have naturally reflected themselves on the crop produced and whilst the quality is generally above average the quantity has been reduced to a serious extent in some districts and much fruit will not attain the size required for export; this applies particularly to such late varieties as Sturmer Pippin. In certain areas, too, Pear crops have been reduced for similar reasons. Colour has been generally good and bright days, recent showers and cool, foggy nights have produced some very attractive lines. The quality of the fruit in Northern districts, it is reported, has been rarely equalled. It is expected that the rapid ripening of late varieties and the reduction in size may be responsible for considerably reduced shipments in the later boats scheduled.

Packing.

The increased use of Canadian type cases has drawn very considerably on the Instructors' time. Growers having any difficulty with the packing of these cases should communicate with the Department of Agriculture, and arrangements will be made for any necessary demonstrations. Slack packs are still fairly common at the wharf, and much fruit has been held up at different times for this reason.

A few growers have been found packing Canadian type cases on the 10-in. board instead of the 11½-in.; in stacking and stowing, bruising is almost certain to follow this practice, with consequent detriment to the ultimate sale of the fruit.

Pest Control.

The warm, dry weather, whilst discouraging fungus pests has proved very favourable to the rapid spread of most insect pests. Codlin Moth has increased to an alarming extent in some areas and every precaution should be taken against this pest. The use of bandages for trapping the pupae, bark scrapping, destruction by boiling of all fallen and effected fruit and the thorough cleansing of orchard picking cases are strongly recommended. With reference to the latter, numerous pupae may frequently be found in the chinks between the boards, corners etc.

Similar hygienic methods will also serve to check the light brown apple moth which has been more serious rapidly when either or both of the recommended control sprays (Nov. and Jan.) have been omitted. Much this season than previously.

The "Canary Fly" has multiplied fruit required dipping to clean off the fly excreta. With reference to the actual dipping—about three minutes in the water bath should suffice if a certain amount of agitation or movement of the case containing the fruit is carried out. Fruit should then be let thoroughly dry in an airy shed before packing.

School Packing Classes.

Keen interest is being displayed in the W. H. Calvert Shield put up for competition amongst the State schools in Apple growing districts. Already more than 20 schools have made arrangements for classes to be conducted at weekly intervals by the Department of Agriculture. Those schools who desire classes, but have not yet made arrangements, should do so without delay, so that the scholars may have ample opportunity for practice.

ENGLAND'S POPULATION.

We have received from Capt. W. J. Wade, of Sydney, representative in Australia of the Port of Manchester, a framed map of England, giving the most recent census figures of population within 25, 50, 75, and 100 miles of London, Manchester, Bristol, and Hull. Within a 25 mile radius the populations are respectively 9,431,000, 4,354,000, 1,056,000 and 698,000. Within 100 mile radius the figures are 16,053,000, 18,198,000, 12,467,000 and 13,736,000.

Two friends met in the street.

"And how did you get on with your wife's first dinner?"

"Don't ask me! Even the cookery book was burnt!"

Growers should get into touch with Empire Produce Exports.

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And take advantage of their wide connection with importing firms in England, Canada and Europe.

Representatives of—Ridley & Houlding Ltd., London; Mutual Brokers, Montreal; R. & W. Davidson Ltd., London and Glasgow; Roberts Brining & Co. Ltd., London and Glasgow; Thos. Allan & Co. Ltd., Glasgow, and W. Gosley, Hull.

TASMANIA (Continued).

State Fruit Board Meeting.

Permission Sought to Export 2½ in. Sturmers Overseas :: Federal Relief Grant :: Research into Gas Storage Desired :: Spread of Light Brown Apple Moth :: Sydney Market Report.

AT THE MEETING of the Tasmanian State Fruit Board, held on March 31st, there were present Messrs. C. O. Smith (Chairman), R. H. Thompson, J. H. Astell, T. A. Burnaby, L. S. Taylor, W. H. Calvert, M.L.C., B. M. Clark, and the Secretary, A. J. Honey.

2½ in. Sturmers.

Mr. Burnaby moved:

"That this Board strongly recommends to the Apple and Pear export, in view of the serious drought being experienced in Tasmania, and the probability of a shortage in export quantities, the desirability of amending the export regulations to permit of Extra Fancy 2½ in. Sturmers being exported."

Mr. Burnaby stated that in an ordinary season he would not support such a move, but the drought was abnormal.

The chairman seconded.

Mr. Thompson urged the alteration of the regulation to provide for the export this season of 3 inch Apples.

Mr. Astell opposed both propositions, stating that the sending of large quantities of small fruits would be detrimental to the market. The sending of 3 inch dessert Apples to the English markets would be ruinous. He moved, as an amendment:

That no 2½ inch Sturmers be allowed to be exported before the middle of April, after which up to 20 per cent. of small fruit in any one consignment be permitted, provided it is extra fancy.

Mr. Clark seconded.

Mr. Taylor said that, although there was a large proportion of 2½ inch Sturmers in the north this season, he could not vote for the resolution as it stood, contending that if the export of small Sturmers were permitted, 50 per cent. of such would be blemished fruit. He considered if the regulations remained as at present, the increased prices abroad would more than compensate for the non-shipment of small Apples. He would, however, support the shipment of extra fancy 2½ inch Sturmers if such were entirely free from blemish and russet.

Mr. Calvert said that there was an excellent market in Sydney for 3 inch Apples.

The amendment was defeated.

Mr. Taylor then moved a further amendment in favour of the export during the 1936 season of 2½ inch Sturmers, provided that they were of extra fancy quality, and entirely free from blemish. This amendment was also defeated, and Mr. Burnaby's motion was agreed to.

Federal Relief Grant.

The Secretary reported that, of the £80,000 Federal Grant to apple and Pear growers, Tasmania's share would be £42,935, representing a bounty of 4d. a bushel case on the 1935 export.

There was a discussion in Committee regarding the allocation of the grant.

Mr. Burnaby stated that, during the debate in Parliament regarding the proposed grant of £100,000, one member stated that the Tasmanian State Fruit Board was in favour of allocating £20,000 for research work. He considered the Board should make it quite clear that it was definitely opposed to such reduction, having unanimously agreed that growers should receive the full £100,000.

Mr. Astell stated that the Board, which was the mouthpiece of the industry, should have been represented at the Agricultural Conference when this matter was discussed. With regard to research, however, gas storage should be studied, and he moved:

"That it be a strong recommendation to the Minister of Commerce that experiments be carried out in Tasmania by the Council for Scientific and Industrial Research in regard to the gas storage of Apples."

Mr. Calvert seconded.

Mr. Taylor proposed that the letter to the Minister should be prefaced by a definite statement that the Tasmanian State Fruit Board was definitely opposed to the allocation of any portion of the grant for any other purpose than the relief of growers and the motion in this form was agreed to.

Election of Board Members.

The Secretary stated that the members of the Board who were retiring were Messrs. T. A. Burnaby, D. E. Ryan and L. S. Taylor. The closing date for nomination was April 15, and the election would be on May 15. Voting was compulsory.

It was decided to request that provision be made for ballot papers to be witnessed by fruit growers in addition to those who were at present authorised.

Light Brown Apple Moth.

Mr. Taylor moved:

"That the Department of Agriculture be requested to take up the investigation of the light brown Apple moth, with the view to combating the spread of this pest in Tasmania."

Mr. Thompson seconded.—Carried.

Shipments from Port Huon.

Mr. Thompson stated that 2,000,000 cases of fruit were grown in the vicinity of Port Huon. He considered that shipping agents should arrange for more vessels to load at Port Huon. Mr. Calvert said that the loading at Port Huon would relieve the congestion on the Hobart wharves. Mr. Burnaby moved:

"That this Board urges upon the shipping agents the necessity for increasing direct shipment from Port Huon and Port Cygnet in future seasons."

The chairman seconded.—Carried.

The Sydney Market.

The Minister for Agriculture advised that a report had been received from Mr. B. O. Plummer, Tasmanian fruit growers' representative in Sydney: 25,000 cases had arrived; the market was well supplied, and the prices were reasonable. There was a probability of good fruit being short later on. Mr. Plummer reported that the sending of fruit "on the flat" per s.s. "Karoola," was unwise as in unloading, laborers had to walk over the cases. Deliveries from the "Karoola" were unsatisfactory. Mr. Taylor said that the Board's representative at Beauty Point had taken up this matter and it was being dealt with by the stevedoring companies.

"I trust that we shall get along very nicely, Susan," said Mrs. Wiggins, to the maid she had just engaged; "for I am not at all difficult to please."

"No, ma'am," replied the maid, "that's what I thought as soon as ever I saw the master."

Victorian News and Notes

(Continued from page 21).

Pakenham Show.

The Pakenham Show was held on March 30, and was officially opened by Hon. G. Chandler, M.L.C. The exhibits were of high standard.

In the fruit section, the judges were Messrs. J. D. Grant, L. Watt and B. Krone. The champion collection of dishes of Apples was won by F. Kennedy. Other dish classes included London Pippin, Jonathans, Statesman, Yates, Rokewoods, Rome Beauty, Delicious, Sturmer, Granny Smith, Stewarts, Democrats. Winners included, F. Kennedy, Mrs. Schreuder, W. H. Carne, W. H. Black, W. Sheldon, J. J. Ahern. Prizes were awarded to Margaret Black, W. H. Black, J. J. Ahern, D. C. and W. M. Black for cases of Jonathans and Granny Smiths, the last mentioned exhibitors won the Colombie Cup. Trays of various sized Jonathans, Delicious and Granny Smiths were entered by W. C. Harvie, Mrs. Schreuder, W. H. Black and F. Kennedy for which they won prizes.

For three dishes of Pears, Mrs. Schreuder gained first prize, and also for dish of Packham's Triumph Pears. Plates of Passionfruit, Quinces, Lemons and Grapes were exhibited, and Mrs. W. Deveney, F. McDonald, Mrs. W. Webster, and Mrs. Schreuder, won prizes. The Gerrard Shield for children's Apple packing was won by Thelma Black, with Lindsay Stuchberry second. The district exhibit went to Army Road.

A very pleasing feature was the display by the Army Road Young Farmers' Club. This included fruit (Apples, Pears, etc.), vegetables of all kinds, jams, jellies and preserves. The organisers and all who assisted are to be warmly congratulated.

The judge in the farm produce was Mr. W. Wadsley. Prizes for Pumpkins, Potatoes and Onions were won by Leslie King, G. Smith, J. McDonald, E. Buckland, J. Fallon, and J. Reid. Other prizes for French Beans, Beet, Cabbages, Carrots, Lettuce, Cucumber Melons, Parsnips, Turnips, (Swedes and White), Silver Beet, Turkscap, Table Pumpkin, Rhubarb, Marrows, and Squash, went to Leslie King, A. G. Pobjoy, S. Smith, J. Reid, E. Buckland, J. Robinson, J. Matthews, J. Reid, E. Jeremiah, R. Snodgrass, A. Ellett, A. Kennedy and J. Carney. J. Reid secured first prize for collection of vegetables. In the Tomato section, J. Reid, A. Kennedy and R. Ritchie, were prize winners.

Other sections of the show included domestic art, flowers and school work. Outside attractions were the cattle display, horse events and a bicycle race.

At the opening, the Hon. G. Chandler stated he was prepared to give a trophy for the best case of Jonathans, to be competed for at all the shows in the south-eastern province.

Mr. J. J. Ahern, in proposing a vote of thanks to Messrs. Chandler

and Tyner, Ms.L.C., spoke in terms of high appreciation for the services of Mr. Basil Krone, Fruit Packing Instructor to the Dept. of Agriculture.

The machinery exhibits were of considerable interest and included Harvey's ploughs and cultivators, milking machines. The Bave-u power spraying outfit and the new orchard strip plough invented and patented by Messrs. Hillman and Keogh, of Box Hill: this implement was noted to be well constructed with channel steel and having ball bearings, light and easy to work, with levers to regulate the ploughing depth: the implement was designed to cut out the strips between trees and was capable of working with facility on a sideline and easily reversible.

Fruitgrowing at Stanley.

Fruit growing has developed very successfully around Stanley, near Beechworth, Victoria. High quality fruit is produced, particularly Apples, the varieties most favored being Jonathan and King Cole. London Pippins also do very well.

This season, while many southern orchardists have suffered because of lack of water, fruit in the Stanley district has grown well in the deep rich soil. Trees came into bearing early. On some orchards, four year old trees have three bushels per tree. It is an uncommon thing for 1,000 bushels per acre to be harvested. Departmental officers state that some of the finest fruit for export this season has come from the Stanley district.

Cool Storage.

Growers in this favored area have been able to develop cool stores without refrigeration plant, i.e., by erecting these stores in sheltered positions in sides of hills. In this way fruit can be stored successfully for many months for marketing in spring and early summer.

BROADCASTING.

Under the auspices of the Victorian Department of Agriculture, broadcasting programmes will be given from 6.48 p.m. to 7 p.m. through Station 3AR Melbourne, as follows:

On May 1: "Selection and Storage of Potato Seed," by J. T. Ramsay, Potato Expert.

May 29: "Result of Fruit Demonstration Work, 1935-36," by E. E. Pescott, Senior Horticultural Instructor.

June 26: "Fruit Export Observations, 1936," by J. M. Ward, Superintendent of Horticulture.

"My wife has been working on the car, Simkins," the householder said to the chauffeur.

"Very good, sir," replied Simkins, "I'll go and put everything right again."

CITRUS TREES AND ROSES

IF you are planting Citrus, Summer Fruits, or Roses this season, we are offering the best yet produced by the Cumber Nursery. You can with confidence order all varieties of the highest standard. — Send for our 1936 Price List.

MCKEE'S NURSERIES . . . ERMINGTON, N.S.W.

PHONE: RYDE 69.

THE MARKET GROWER

OFFICIAL ORGAN OF THE MARKET GARDENERS AND FRUITGROWERS' SOCIETY OF VICTORIA.
 President: E. A. Le Page. Vice President: Cr. A. Bunny. Committee: G. Ryan, C. James, C. Baker, L. Lawrence, J. Hawkes, J. Stocks. Arbitration Committee: H. V. Barnett, W. Simmonds, E. A. Le Page, H. Besant, W. D. Barnett.
 Secretary: Cr. C. C. A. George, Hightett Road, Moorabbin, Vic.

ALSO OFFICIAL ORGAN OF THE KOONDROOK & BARHAM TOMATO GROWERS' ASSOCIATION.

DERRIS ROOT POWDER

Its Place in Cabbage Moth Control.

W. L. Morgan, B.Sc.Agr., Assistant Entomologist, N.S.W. Department of Agriculture.

THE PRELIMINARY EXPERIMENTS discussed in this article have demonstrated the value of derris dust during the last six to eight weeks of growth, while the hearts are forming, and during which time arsenical sprays must not be used, because of the danger of the poison remaining on the edible portions of the plants.

Objections to Arsenicals.

Lead arsenate powder mixed in equal parts with hydrated lime or kaolin is an efficient dust for control of cabbage moth up to the commencement of hearting; thereafter it is less effective. Moreover, treatment of cabbages and cauliflowers with arsenicals must cease when the hearts commence to form, otherwise arsenical residue may occur on edible portions of the plants. The Department of Agriculture's recommendations are that treatment of these crops with arsenicals should be discontinued six weeks before cutting, or as soon as the centre leaves commence to fold over preparatory to the formation of the heart. Where, however, warm, dry weather conditions prevail during the late stages of growth, the hearts usually become severely infested, and a treatment, therefore, is required which can be used on plants approaching maturity without danger to consumers.

Derris Root Non-Poisonous.

Although the use of finely powdered derris root mixed with talc for control of certain vegetable pests is a recent development, derris and its extracts have been used in insect control for many years, and no harmful effect to consumers has been shown to occur from the treatment of fruit and vegetables with derris or its extracts.

In the writer's experiments for the control of cabbage moth with a dust consisting of one part of finely powdered derris root in nine parts of talc, 80 per cent. of the caterpillars on cabbages of various sizes up to the early stages of hearting were destroyed when the dust was applied at the rate of 1 lb. to every 400 to 500

plants. In five preliminary tests on plots each comprising ten cabbages, which were dusted at weekly intervals commencing three weeks after transplanting, the derris dust and a 50 per cent. lead arsenate dust each gave effective control up to the commencement of hearting, the untreated plants in the control plots being heavily infested. The two treatments were continued during the late stages of growth, while the hearts were forming and in each of five tests derris proved more effective than lead arsenate on plants that were approaching maturity. Of a total of fifty cabbages treated, derris gave 47 marketable hearts, lead arsenate, 38, and the untreated, nine.

In field experiments, where four dustings at seven to ten days intervals were applied to cabbages during their early stages of growth up to the commencement of hearting, one part of finely powdered derris root mixed with nine parts of talc was not appreciably less effective than a dust consisting of equal parts of lead arsenate and kaolin.

The degree of damage due to cabbage moth infestation, which was recorded one week after the second and third dustings, in two separate experiments at Campsie and Dural respectively, shows that both treatments provided efficient control in the early stages of growth.

The dusts were applied at the rate of approximately 1 lb. to every 450 plants.

Interval Between Treatments

The field experiments have shown that where the conditions are favourable to severe infestation the period of time between each treatment, either with derris root powder or lead arsenate, should not exceed ten days.

As the cost of treating cabbages and cauliflowers with lead arsenate powder is approximately 25 per cent. less than with derris root powder it is recommended that lead arsenate should be used in the early stages of growth until hearting commences, but during the last six to eight weeks of growth while the hearts are forming, cabbages

IN PRAISE OF CELERY

Celery is a Valuable Food and Health Product.

NOW THAT THE CELERY SEASON is with us, the South Australian Fruitgrowers' and Market Gardeners' Association (Celery section) is conducting an active advertising campaign.

One of the propaganda methods employed has been the issuing of a valuable leaflet in praise of Celery, which is reproduced hereunder.

Food Facts.

Science is concerning itself with our foods as never before. Even the vegetables have been analysed and are valued for the mineral salts and vitamins they contain. Gone are the days when a Cabbage was just a homely adjunct of roast beef or mutton. Nowadays Cabbages are among the aristocrats of the vegetable kingdom, because they contain calcium and sulphur, which purify the blood.

A Head of Celery.

But, good as they are, Cabbages are a much lower order of vegetable aristocrats than Celery. This succulent, juicy accompaniment for cheese and biscuits at the end of a meal has at last come into its own, and reigns queen of the kitchen, when the cook knows her business. For one thing, Celery is the only vegetable sold by its head. The others are bound up in bunches, sold by the dozen, pound, quarter, and so on. "A head of Celery, please," emphasises its importance.

But why this importance? Here are the facts that account for it.

and cauliflowers should be treated for cabbage moth control with a mixture of one part finely powdered derris root and nine parts of talc.

The Department is indebted to Messrs. Houghton and Byrne for supplies of the derris root powder for the whole of these experiments.—"N.S.W. Agricultural Gazette."

HISTORIC SITE USED FOR GROWING MUSHROOMS.

An historic spot in the annals of locomotive construction is now a Mushroom bed.

At Newcastle (Eng.) on the site where George Stephenson made parts of his famous "Rocket" locomotive, two growers are now producing Mushrooms for market and expect to gather a crop of 3,000 lbs. in the next three months.

It is singularly appropriate that the spot which was the birthplace of speed in transport should now be devoted to the culture of what is popularly supposed to be the fastest growing of all crops. As a matter of fact the popular theory that Mushrooms "grow in a night" is actually anything but true—they are quite a time in reaching the stage when they are fit to gather. The Cucumber, under favorable conditions, is one of the fastest of all plants in its growth.

Policeman (producing notebook): "Name, please."

Motorist: "Aloysius Alastair Cyprian."

Policeman (putting away notebook): "Well, don't let me catch you again."

Celery has large quantities of two most necessary mineral salts—Chlorine and Sodium—and also of vitamin B.

Good for Nerves.

"Celery acts on the nervous system," says that famous dietitian, Dr. B. G. Hauser, of Vienna. "It is strongly alkaline and is the outstanding remedy for neuritis, sciatica, and rheumatism. It also benefits the stomach, liver, kidneys, and brain. If eaten for two days raw, or in soup (without salt), it clears the blood, tones up the liver, regulates the kidneys, and relieves brain fag. Celery should be used freely with Lettuce, green peppers, Tomatoes, and raw Apples.

This Beauty Business.

But that is not all. The vital question of to-day among some women is, "What to eat to keep slim?" Here Celery comes to the front again. "Because of the chlorine it contains, Celery is a great eliminator of waste matter. Celery soup, made into a jelly with the vegetable gelatine Agar-Agar, and flavored with marmite and eaten twice a day for lunch and dinner, soon brings down excessive weight. So eat Celery and keep slim," says the same great authority on dietetics, Dr. B. G. Hauser, of Vienna.

A Food Remedy.

Another food-fact that ought to be better known is that the sodium in Celery prevents hardening of the arteries and catarrhal deafness. Celery tea is rich in sodium and should be used every day when this valuable food-remedy is in season. The free use of raw Celery, Celery tea or soup, steamed or lightly stewed Celery, will prevent many tiresome ailments and cure those not too far advanced.

Good Food Means Good Health.

Think what these food-facts may mean to you! Money spent on good, fresh Celery will be much more money saved on other things. Good food is the cheapest thing in the world. Good food means that radiant feeling which belongs only to perfect health. So to all we would say with science—"Eat Celery and be well."

SOME WAYS TO USE CELERY AS A REMEDY.

Celery Tea.

Made from the root, the outside green stalks and the tops. Wash all these carefully, cut into medium-sized pieces, cover well with cold water, and simmer for only half an hour. Then strain and season with Celery salt. Never use common salt with Celery. Drink this tea hot or cold instead of other liquids. Good for rheumatism, gout, nerves, stomach trouble, liver, kidneys, and brain fag.

Raw Celery Juice.

This has great curative properties and is easily made. Wash the root, outer stalks and leaves. Put through a mincer with a basin underneath to catch the juice. Use the finest grinder. In cases of rheumatism drink this juice cold or very slightly warmed. This is a valuable remedy for all troubles helped by Celery.

Green Celery Tea for Rheumatism.

Take three good hearts of Celery, wash very thoroughly in plenty of cold water and salt, then chop up very small and put into a jar or jug,

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with a quart of water and a salt-spoonful of salt; cover closely and steam four hours. Strain carefully, mix with half the quantity of fresh milk, season with a little salt and pepper and drink hot. This is an excellent recipe for relieving muscular rheumatism.

Easily Made Celery Sauce.

Cut the Celery in one inch pieces and wash well. Put into a saucepan with enough boiling water to cover it, add a little salt; boil until tender, then pour in enough milk to make required quantity of sauce, bring again to the boil, and thicken with cornflour; add a small piece of butter, a little pepper and stir well. This is nice served with boiled meat or over vegetables.

Celery Served as a Vegetable.

Wash the Celery well and cut into pieces, three inches long. Put into slightly salted boiling water and cook till tender, then drain. Make a white sauce with milk, a little butter, pepper and salt to taste, and pour over the Celery. Serve with sauce poured over Celery.

Mock Tripe.

Take a flap of mutton, cut in two inch squares, place in a saucepan with just enough water to cover, boil about two hours, and let stand till cold. Take off all fat which has set on the top. Put back on the fire with a large Onion sliced, and a cup of chopped Celery, cook until tender, then add two cups of milk, pepper and salt to taste, and thicken with a little flour or cornflour. Just before it is done add a pinch of carbonate of soda. This dish is both tasty and economical.

Celery Boiled.

Take the tender tops of Celery, wash well, and boil till tender, adding little salt to water. Drain and press as with Spinach; add pepper and small piece of butter and mix well.

Try This!

Celery is very useful when making up dishes from cooked meat. Add some finely chopped Celery, either from the stalk or tender leaves, to the meat when making rissoles, and the result will please you. All soups, even Pea, are improved with Celery added, and same can be said of stews, curries, and hashes.

Boiled Celery.

Have ready a saucepan of boiling water with a little salt in it. Wash the Celery carefully. Cut off the outer leaves, make the stalks even, and lay them in small bunches. Place these into the water and let them boil gently until tender, leaving the saucepan uncovered. When done, drain and place them on a piece of toast which has been dipped in the liquid. Pour on them a little good melted butter, and serve.

Time: Young Celery three-quarters of an hour; old, one hour and a half. Keep the water for stock.

As a Garnish.

To curl the stalks of Celery, take a small sharp knife and cut the tops in fine strips like a fringe, and to a depth of about two inches. Place these into cold water, and in a short time these little strips will curl over and give a decorative appearance to the stalks of Celery. If the curled Celery is required as a garnish for a salad or such like, cut a few firm pieces about four inches long. Cut both ends down in narrow strips, leaving an inch or so in the centre as a foundation. Let these lie in cold water for half an hour or so until they curl up.

Celery Tops in Salads.

Never throw away the Celery top. Wash well, use the coarse leaves for soup and the finer ones for salads, with Lettuce, Tomatoes, and green peppers.

Celery Soups.

Made from the same parts of the plant, with the addition of Onion

flavoring. Strain, thicken with cornflour and milk, add a bit of butter, parsley, and season; reheat, but do not boil, or the milk will curdle. Remember most of the valuable mineral salts are in the root, outer stalks and leaves at the top of the Celery. Always use these for tea or soup.

Celery Salads.

Celery combines with almost any other vegetable or fruit and nuts. Use the white stalks finely diced for salads; half to one cupful is enough at one time.

Celery in Soup.

Celery is excellent in stews and soups. Cream of Celery is always good. Chopped Celery improves any soup if used in the following proportions:—1 head in ox-tail soup; 1 stick in pea soup; $\frac{1}{2}$ head in julienne soup; 1 stick in fish soup; 1 small stick in vegetable soup made without stock.

Cheese and Celery.

Take a whole head of Celery, wash it well, and search all nooks and crannies for foreign bodies, but do not break off more of the sticks than necessary. Boil it whole (minus its top, of course) in plenty of salted water until it is tender. Drain it well and put in a shallow baking dish. Make a good white sauce with flour and butter and milk, season with pepper and salt, and pour over the top of the Celery. Now cover it with thick slices of cheese, and brown it under the griller. If you want to make a more substantial meal, surround it with hard-boiled eggs.

The water in which the Celery was cooked will make soup, white or brown.

Celery Loaf.

Very nice.—1 small cup wholemeal bread crumbs, $\frac{1}{2}$ cups diced Celery, $\frac{1}{2}$ bunch Parsley cut fine; $\frac{1}{2}$ cup walnuts, ground fine; 1 large Onion, cut fine; $\frac{1}{2}$ green pepper, four small mushrooms. Add two well beaten eggs, 1 teaspoon butter, pinch whole spice, $\frac{1}{2}$ cups of milk. Mix well, stand 20 minutes. Bake in moderate oven 30 minutes. Serve with Marmite gravy.

ONION BOARD.

Compulsory Control.

A proclamation issued by the Executive Council advises that, under provisions of the Marketing of Primary Products Act, 1935, all Onions grown in Victoria now become the property of the Board. Onions intended for marketing will in future be sold by the Board and growers will receive payment accordingly from the Board.

The proclamation requires all producers or holders of Onions to furnish a return showing the quantity held, also a record of contracts entered into in respect of the delivery of Onions.

ONIONS IN IRELAND.

In order to encourage the greater production of Onions in Ireland this season a large number of demonstration plants are to be laid down. The finest Irish Onions are grown in the Maharee (Dingle peninsula) where the crop averages 15 tons to the acre. In some counties in Leinster only five tons per acre are obtainable.

48 MILLION TONS OF POTATOES.

Averaging the annual production over the past five years, Germany produces 48 million tons of Potatoes per year. Of this huge quantity, 15 million tons are used for food, the balance is used for feeding pigs.



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"Beauty" (Knapsack) Dusters
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EVERBEARING POTATOES.

Discovery by Russian Scientists.

Russian scientists are reported to have discovered a type of Potato that keeps on growing—producing another crop as soon as the previous one has matured. But would the introduction of these non-stop Potatoes add still further difficulties to marketing control?

That there is ample need for further research work in connection with the Potato is proved by the fact that in all the three hundred years of culture and breeding work the Potato, by far the most important of all edible root crops, has never been made hardy enough to resist freezing, nor immune to the diseases that have always afflicted it. Indeed, the Potato is even more troubled by diseases these days than at any time, perhaps the most difficult to control being virus diseases that are transmitted in various ways. Scientists and breeders have time and again sought natural forms of Solanum tuberosum that would be helpful in putting new stamina into cultivated varieties with avail.

Russian scientists, however, have come to the conclusion that the race of Potatoes came not from the Andes but from southern Chile. In the latter region both wild and cultivated forms have been found which are resistant to blight (*Phytophthora* and virus disease) and others which grow at elevations of 15,000 ft., which are so hardy that they can resist near zero temperatures. Some never stop growing, the plants starting to produce a new crop of tubers as soon as the previous crop is matured. With this new material, the Russian investigators naturally expect to develop new types of economic importance.

POTATOES IN N.S.W.

Rainfall in Western and Southern main-crop districts of N.S.W. was somewhat excessive and resulted in a reduction of yield in many localities, reports the Dept. of Agriculture early in April. In late-sown areas the continuance of wet and cool conditions proved very adverse, but it is doubtful if extensive losses will be occasioned. Notwithstanding the early loss of foliage there will be a high average yield in both these sections of the State. Damage would appear to be the worst in those localities nearest the seaboard, little or no trouble occurring in the more inland areas. Late plantings in the New England made up well, and the return in this division of the State will be much higher than early forecasts indicated. The digging of early crops is well advanced. Harvesting has also commenced in Western and Southern districts and should be fairly general during April.

Concert Singer: "Did you notice how my voice filled the hall to-night?"

The Gent: "Oh, I suppose all those people who walked out were making room for it."

I Cut 95% Clean Cauliflowers!

WROTE A GROWER WHO USED

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"DERRIDUST" is High Quality Derris Dust—it contains no less than

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Moreover it is finely milled and spreads well. Houghton & Byrne were the first to introduce a Derris Dust on the Australian market. In Official Tests

"Derridust" has given better results than Lead Arsenate.

Growers! If you want more marketable hearts use "Derridust." It sweeps away the poison residue problem and is safe from planting day to cutting time. "Derridust" controls Cabbage Moth, Loopers, Diamond Back, Flea

Beetles, Green Peach Aphids, etc., etc.

1/- per lb. in 100 lb. Lots

50-lb. tins 55/- 25-lb. tins 25/- 5-lb. tins 10/-
1-lb. tin 2/6 $\frac{1}{2}$ -lb. tin 1/6

A Queensland grower writes:

"We have been using "Derridust" for the last six weeks for control of Cabbage pests. We marketed about 70% of our crop free of pest damage whilst the remainder were quite marketable and saleable.

We consider "Derridust" to be the best insecticide we have ever used."

Order "DERRIDUST" from your dealer, or the Manufacturers:—

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Illustrated Pamphlet on request.

Motor Cars, Trucks, Tractors

Thinking and Braking

At only 20 miles an hour, the average driver goes 22 feet before he can even start to use his brake. Then, after he does brake, it takes him another 18 feet to stop completely, even with the best brakes in the world and with good tyres, under favorable road conditions, so we are told by the Board of Public Works of the United States, which has made a very intensive study of drivers and driving conditions, using the most accurate instruments in these tests known to science.

Recently, the National Safety Council of Melbourne conducted a series of driving tests in "Safety Lane," using as part of their equipment for this purpose traffic "stop"

light signals. About 500 drivers and their cars were tested. Mr. Eric Thonemann, stock and share broker, of 395 Collins-street, driving an 8/40 Buick sedan, put up a remarkable performance, which is claimed to be a world's record for alertness, when he applied his brakes in 1/7th of a second after the "stop" signal had been given, but the most remarkable part of all was that he travelled only four feet after seeing the "stop" signal before braking. Most of those who had been through "Safety Lane" travelled at least 30 feet. The officials therefore thought Mr. Thonemann's performance was a fluke. He was put through a second test and repeated his previous performance.

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PULLING POWER (Rim Pull). — Unapproached by other trucks.

TORQUE, 156 ft. lbs. from 900 to 1,500 engine revolutions. Compare this with all others.

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sible . . . with straddle mounted drive pinion.

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tor jaws of steel.

TRANSMISSION. — Extra heavy. Four forward speeds.

SPRINGS. — Four long, heavy semi-elliptic, with auxiliary helper springs at rear.

APPEARANCE. — Never before have such good looks been so well combined with strength, durability and low main-

tenance costs.

You are invited to have all these claims confirmed by Preston Motors Pty. Ltd., who will definitely prove the truth of them by a demonstration on your own particular work. "Maple Leaf" is available on 141 in. and 165 in. wheelbase models.

Chassis Price From
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No. 15

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The important thing for drivers to realise is that distance needed to stop increases a great deal as the speed is increased. It must be remembered that when moving along in a car, we think by the foot, act by the foot, and stop by the foot, and if we are not careful its pretty easy to go faster than is really safe.

PETROL CONSUMPTION.

Greater at High Speed.

Though it is generally known that more petrol is consumed at high speed than at a moderate rate of travel, the difference is not always realised, and the factory is then blamed for having made an exaggerated claim.

A number of tests were recently made by the United States Bureau of Statistics, and averages taken to arrive at a typical performance. These tests disclosed that a car which travels 21 miles to a gallon at 30 m.p.h. will get 19.6 at 40, 17.5 at 50, 14.11 at 60 m.p.h., and only 10.3 at 80, or less than half of the mileage obtained at the slower rate. Since petrol is the largest single factor in the cost of car operation, the motorist can readily see the benefit of moderate speed.

Study of oil consumption at various speeds was also made in a test conducted at the Indianapolis speedway. This survey involved 13 makes of automobiles, each of which ran 9,000 miles, and more than 600,000 calculations and observations were made. Averaging the performances of all cars, it was found that 6.9 times as much oil was consumed at 55 m.p.h. as was used at 30 m.p.h.

The American Automobile Association also drew attention to the fact that the strain placed on a vehicle by excessive speed shortens the life of the machine because engine, tyres and steering mechanism are all subject to unusual wear and tear when the driver is suffering from a speed complex.

SPOTLIGHTS.

As doubt appears to exist among motorists, particularly in the country, concerning their right to carry spotlights on their cars, the Royal Automobile Club of Victoria, in a bulletin recently issued, explains that while a regulation under the Motor Car Act makes it an offence to use a spotlight on any car while in motion in any city, town or borough, or on any State highway, the Police Department has not objected to spotlights being affixed to cars providing they are not used in contravention of the regulations. There is no objection to the use of spotlights for locating or repairing faults, or when travelling in country districts where the roads were not in good condition. They must, however, not be used in thickly populated centres such as the metropolitan area and all large cities and towns in the State.

NEARLY 60,000 MOTORS IN 1935.

The official registration figures for motor cars and trucks in Australia for 1935, recently supplied by Mr. J. S. Strong, Australian representative of the Society of Motor Manufacturers and Traders, London, shows that in Australia, for 1935, 40,124 cars were registered, and 17,575 trucks, a total of 57,699 motor vehicles. To Chevrolet goes the honor of leadership with 12,611 units, as against the next highest competitor with 10,986.

HOME-MADE AXLE GREASE.

To make axle grease for carts on the farm, the following recipe is recommended:—Melt 8 lbs. fat, stir in 2 lbs. finely powdered blacklead and keep stirring (off the fire) until the mass becomes solid.

Another one is to melt together 2 lbs. fat and 3 lbs. linseed oil. When mixed, add 2 lbs. paraffin and 3 lbs. vaseline. Add just enough blacklead to color.

Still another:—Heat together 1 qt. castor oil, 1 qt. linseed oil, 2 lbs. tallow, 2 lbs. resin and 1 lb. beeswax. Stir until they are thoroughly mixed, remove from fire and stir until cold. If too hard, add a little neatsfoot oil, if too soft, add more tallow.

STICKING BRUSHES.

Much sparking, commutator, and brush wear may be due to brushes sticking. Among the causes of sticking brushes the most common are dirt or carbon dust on the brush or brush-holders, and brushes too tight in the holders. Brushes should be fitted so as to make for a sliding fit in their holders; that is to say, while there should be no sloppiness, the brushes should move up and down with perfect freedom.

THAT ELUSIVE SQUEAK.

Motorists who at times are annoyed by a slight squeak coming from the front of the car may find it is caused by the bonnet rubbing against its support at the front or rear. After a time the heavy tape upon which the bonnet usually rests becomes dry and hard, thus setting up friction and a mild squeak. By rubbing the tape with common yellow soap or grease or thick oil, the trouble can be easily cured.

CHEVROLET INSTRUCTION BOOK.

Profusely illustrated with excellent diagrams of how to get the maximum use, safety and enjoyment out of the car, the new 1936 Chevrolet Instruction Book, issued by Preston Motors Pty. Ltd., the Metropolitan Distributors, is entirely different to the usual stereotype manual issued in the past.

The absence of technical terms will surprise you. There are few of these to bore the motorist, who is not concerned with technical details, but who requires information on peak performances, maximum economy, safety and comfort, written in non-technical terms he can understand.

On the other hand, for the weekend owner-mechanic, who personally grooms his Chevrolet, there is a mechanical section that will fill his needs, and a chapter on "Keeping the Car Looking New," which is most instructive.

The filter in the vacuum tank should be cleaned regularly. It is surprising how dirt accumulates in it, and it is easier to do the job in the garage than on the road.



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Citrus News and Notes

Maturity Standards for Citrus Trees

Tests with Oranges and Grapefruit

Wireless Talk by Mr. J. L. Provan, B.Agr.Sc., Horticultural Research Officer, Victorian Dept. of Agriculture, over 3AR on April 24, 1936.

DURING APRIL, small consignments of the new season's citrus fruits have been arriving on the Melbourne market from Queensland and New South Wales. Victorian citrus from the earlier districts does not appear on the market until the end of this month, and then continues until February of next year. The citrus season therefore, is a particularly long one, extending over ten months of the year. It commences with an early variety of Navel Orange called Thompson's Improved

Navel and continues on with the Washington Navel, the so-called Australian Navel, the Common Orange, and finally the Valencia Late Orange. In addition to Oranges, Mandarins, Grapefruit and Lemons are also marketed during this period.

Early oranges in Victoria commence coloring during April. The deep green is gradually displaced by a silvery green which changes quickly to a greenish yellow. This color rapidly passes to the Orange and reddish Orange of the more mature fruit.

The change of color is not a reliable guide to maturity. Some Oranges may be quite green externally and still be palatable, while others may have developed full color and remain unattractive to the palate. Early this month I had an opportunity of tasting some early Mildura Oranges, and although the development of full flavor had not yet occurred, the fruit could not be considered unpalatable.

Small consignments of early Oranges have always paid good returns to the grower, and it is only natural that citrus growers are eager to market at least a portion of their crop early, in order to participate in the high market prices. Unfortunately for the purchaser, many growers, whose fruit could not be considered early, marketed their fruit at this period, and this resulted in many

complaints of immature fruit being marketed.

Such fruit is usually well colored, but very sour to taste.

Externally, therefore, it is impossible to distinguish between the early ripening and the immature fruit. Purchasers of the immature fruit are naturally disappointed with their purchase and decide to buy no more Oranges for the time being.

Citrus growers realised that such a repercussion was detrimental to later sales of their produce, and therefore steps were taken through the growers' organisations to have a standard of maturity

fixed, and to prohibit the sale of Oranges which did not comply with this standard. The Department of Agriculture undertook to make chemical analyses of citrus fruit from all the principal Victorian districts as well as interstate fruit arriving on the Melbourne market. These analyses were commenced on early samples and continued throughout the season. In this way it was possible to study the maturing processes taking place inside the fruit. This study revealed that the ripening of fruit was a very complicated chemical and physical process. As Oranges mature a gradual diminution of acids is noted, and an increase of sugars takes place. This change is accompanied by the development of flavor, a complicated phenomenon which at present, is not understood. At the same time the fibrous portion of the pulp becomes tender and the juice content increases. The whole ripening process of an Orange is a gradual one, and, while no clear starting point can be determined, it can be said to commence after full growth is completed.

In Victoria, one would not be far from the truth, if one stated that the ripening process requires approximately three months.

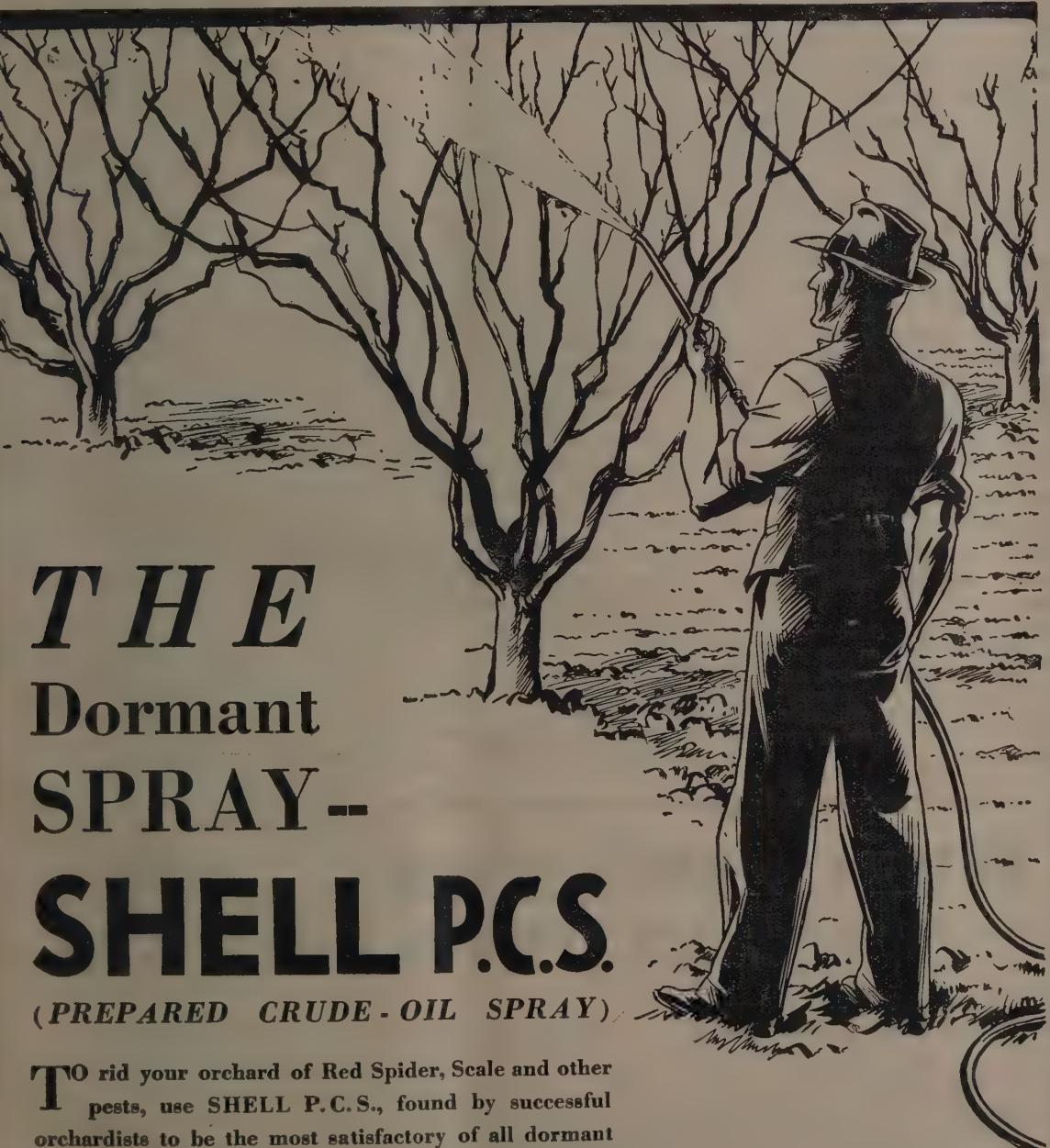
Just as it is difficult to state exactly when the fruit commences to ripen, it is also difficult to state accurately when an Orange is definitely mature. Apart from any chemical or physical test the importance of the palate test must be taken into consideration. One naturally hesitates to discuss the variability of individuals on such a subject as the palate, but granted that taste is as variable as the wind, a general standard can be defined based on a large number of opinions. Over a number of years I have sought the opinions of many people who enjoy eating Oranges, and have become convinced that the demand is for juicy, sweet fruit possessing a good Orange flavor. Essentially, the fruit must be sweet.

The decrease in acidity in maturing Oranges was used as a basis of the maturity standard, and it was finally determined, that an Orange which contained more than 1.6 per cent. of acid should be considered immature. The acid determination has the advantage of being simple and can be performed easily by the grower himself. In fact, small sets of the necessary apparatus can now be obtained from leading chemical supply firms in Melbourne, or from the Victorian Central Citrus Association.

The regulation determining immature Navel Oranges states that the amount of acid in ten cubic centimetres of Orange juice shall require not more than 26 c.c. of standard alkali (in this case deci-normal sodium hydroxide) to neutralise it. For the more acidic seed or Common Oranges—30 c.c. of alkali are allowed.

The basis of a maturity standard must be some simple chemical test which is reproducible, and which will exclude Oranges considered immature by a number of competent tasters.

The maturity standard for Oranges has been in operation for six years,



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TO rid your orchard of Red Spider, Scale and other pests, use SHELL P.C.S., found by successful orchardists to be the most satisfactory of all dormant sprays. It not only controls the pests, but leaves the trees clean and healthy.

Apart from being the most efficient winter-spraying oil, SHELL P.C.S. is also the lowest-priced. Obtain full particulars of SHELL P.C.S., SHELL RED SPRAY and SHELLCIDE "D"—without delay—from The Shell Company of Australia Limited.

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SWEETER ORANGES.

South Africa Seeking Means.

According to Dr. H. J. Van der Plant, the botanical expert of Pretoria, the difficulty of making South African Oranges sweet enough for British palates is of considerable complexity, says the "Fruit Trades Journal" (Eng.). Orange trees, according to this expert, do not readily absorb phosphorous fertilisers. Scientists have been trying for some time to overcome the lack of phosphorus which is characteristic of the country, and the presence of which is responsible for Brazilian Oranges being so popular in Britain, owing to their sweetness.

Further researches, however, are being pursued, which it is hoped will result in sweeter South African Oranges for export.

and the general opinion of the majority of agents and buyers is that it has definitely improved the quality of the early citrus fruit on the Melbourne market. It can be claimed that it has been of great assistance to the Orange growers in the mid-season and late districts because the early districts exploit the market at the beginning of the season and so ease the market for the later districts.

In California and South Africa, maturity standards have been in use for many years. The standards in both these countries are based on the ratio of total soluble solids (these are principally sugars) to the acid content. In Victoria, we have found the simple acid test to be just as efficient for the majority of fruit as the more complicated solids-acids ratio. Oranges which were classed as immature by the acid test, almost invariably would be classed immature by the other.

The maturity of Oranges at any one time depends on the variety, strain, locality, soil, root-stock and cultural operations and even fruit on the one tree may vary. The larger sizes hanging low around the tree are usually more mature than the smaller fruit, and that borne higher in the tree. Growers are advised to watch these points when picking, and to taste the fruit occasionally. With practice the acid content can be fairly accurately estimated by the palate.

Maturity of Grapefruit.

The successful operation of the maturity standard for Oranges has resulted in a request for a similar standard for Grapefruit. The Grapefruit is closely related botanically to the Orange and therefore it was anticipated that its maturing process would be comparable. The necessity for a maturity standard for Grapefruit has been stressed for the past two or three years, and if its consumption by the Melbourne public is to be increased, it is essential that it should be marketed in its most palatable form. Immature Grapefruit possesses a sharp and raw bitterness which will never be popular on the Melbourne market.

Last season a series of chemical tests were made with samples of Grapefruit from two Victorian districts. The first sample was picked on May 4, and subsequent samples were picked every fortnight from the same trees. These samples were analysed for juice content, total soluble solids and acidity. It was considered that these features would give some guide to the ripening process.

When an examination of the results was made it was found that the juice

content of Grapefruit, unlike that of Oranges, remained remarkably uniform throughout the entire period from May to November.

The acidity of the Merbein Grapefruit did not vary greatly until the end of July, when it was equivalent to 28 c.c. of soda. The acidity decreased rather rapidly from this date until the middle of September, when it was 23 c.c. The acidity of the Swan Hill Grapefruit showed a gradual, though slightly irregular decrease from May 6, when it was 34 c.c., until November 11, when it reached 27 c.c. An interesting feature, noticed with the Swan Hill Grapefruit, was that the acidity was always three to five c.c. above that of the Merbein fruit. A maturity standard based on acidity would be impossible, if these analyses are a true index of the ripening behavior of Grapefruit. Much Grapefruit is harvested during June, because a natural drop of fruit from the trees takes place during this month. Prior to the end of July no marked decrease in acidity occurs, and therefore no point could be decided upon as a reliable standard. In addition, an acidity standard, based on Grapefruit from Merbein, would not be applicable to the more acid Swan Hill fruit.

An examination of the total soluble solids content (estimated as degrees Brix) of the Merbein fruit showed that it fluctuated between 8 deg. and 9 deg. for the whole season. Grapefruit from the Swan Hill district contained total soluble solids varying from 10 deg. to 12 deg. Brix for the seven months of the test. In neither of these cases was there a definite increase in total soluble solids last season, and the maturity of Grapefruit appears to differ in this respect from that of Oranges.

As the season advanced a marked development in flavor was noticed, and this occurred irrespective of the small fluctuations in acidity and Brix. Full flavor was apparent early in July, and the picking of Grapefruit before this date would appear to be detrimental to the future popularity of this excellent fruit. Only fruit which falls naturally from the trees should be marketed in the early part of the season, except where favored localities develop the full flavor earlier.

During the approaching season, further investigations on the maturity of Grapefruit are proposed, and it is hoped that cool storage experiments and respiration tests will assist us in understanding the ripening processes of this fruit.

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The acidity of the Merbein Grapefruit did not vary greatly until the end of July, when it was equivalent to 28 c.c. of soda. The acidity decreased rather rapidly from this date until the middle of September, when it was 23 c.c. The acidity of the Swan Hill Grapefruit showed a gradual, though slightly irregular decrease from May 6, when it was 34 c.c., until November 11, when it reached 27 c.c. An interesting feature, noticed with the Swan Hill Grapefruit, was that the acidity was always three to five c.c. above that of the Merbein fruit. A maturity standard based on acidity would be impossible, if these analyses are a true index of the ripening behavior of Grapefruit. Much Grapefruit is harvested during June, because a natural drop of fruit from the trees takes place during this month. Prior to the end of July no marked decrease in acidity occurs, and therefore no point could be decided upon as a reliable standard. In addition, an acidity standard, based on Grapefruit from Merbein, would not be applicable to the more acid Swan Hill fruit.

An examination of the total soluble solids content (estimated as degrees Brix) of the Merbein fruit showed that it fluctuated between 8 deg. and 9 deg. for the whole season. Grapefruit from the Swan Hill district contained total soluble solids varying from 10 deg. to 12 deg. Brix for the seven months of the test. In neither of these cases was there a definite increase in total soluble solids last season, and the maturity of Grapefruit appears to differ in this respect from that of Oranges.

As the season advanced a marked development in flavor was noticed, and this occurred irrespective of the small fluctuations in acidity and Brix. Full flavor was apparent early in July, and the picking of Grapefruit before this date would appear to be detrimental to the future popularity of this excellent fruit. Only fruit which falls naturally from the trees should be marketed in the early part of the season, except where favored localities develop the full flavor earlier.

During the approaching season, further investigations on the maturity of Grapefruit are proposed, and it is hoped that cool storage experiments and respiration tests will assist us in understanding the ripening processes of this fruit.

N.S.W. CITRUS GROWERS' DEFENCE ASSOCIATION

Rescission of Orchard Tax Desired, or Alternately, that it be used for Research Work — Proposed Marketing Bill Opposed — Amendment to Primary Products Marketing Act Desired — Citrus Export Rebate.

A MEETING of the N.S.W. Citrus Growers' Defence Association was held on March 3, Mr. W. J. Black (Mangrove Mountain) being in the chair.

Considerable discussion took place on a letter received from the Department of Agriculture in answer to a request from the Association for a referendum on a rescission of the Orchard Tax. The letter stated that "there does not appear to be any record in the Department of a promise having been given that a referendum would be taken on the question as to whether the Orchard Tax should be retained or abolished."

Several speakers present assured the meeting that such a promise was made in their hearing by Mr. F. Chaffey, who was Minister for Agriculture at the time. Considerable surprise was expressed that any attempt should now be made to evade the issue.

There was severe criticism of this letter, several statements being deemed inaccurate. The letter credited the Fruitgrowers' Federation with the many benefits received at the hands of the Government during the past few years. Delegates stated that many of the benefits referred to were the outcome of approaches made to the Government through its Ministers by various organisations of growers in their districts and not by the Federation officials.

The following resolution was carried unanimously:—

"That this meeting of the Executive of the Citrus Growers' Defence Association again requests the Minister for Agriculture to take a referendum of growers on the revision of the Orchard Tax, and, pending the taking of the referendum, to divert that portion of the tax paid to the Fruitgrowers' Federation to the expansion of activities within his Department, especially in the direction of scientific research."

Proposed by Mr. G. O. Maher (Lisarow), and seconded by Mr. V. S. Fagan (Lisarow).

It was considered that this money would be much more wisely spent in

research work. The industry had passed through such a serious period that growers needed relief from the payment of the tax.

Proposed Marketing Bill.

Strong objection was taken to the action of the Government in appointing a committee consisting of representatives of the Fruitgrowers' Federation and certain Government officials to formulate proposals for the introduction of a Marketing Bill. It was stated that the Citrus Growers' Defence Association had strenuously opposed the introduction of any Marketing Bill, as it inevitably must destroy individual enterprise and hand the control of fruit from the time it leaves the orchard to a Board. The view was expressed that Australia was becoming like Soviet Russia with the introduction of so many bureaucratic boards.

The Secretary, Mr. H. G. Bennett, explained that the Marketing of Primary Products Act already provided the industry with the machinery necessary to control the marketing of a primary product. Even this Act, he said, went too far. It provided, inter alia, that if a simple majority of growers voted in favor of the constitution of a Marketing Board, the Government could, by proclamation "declare that the commodity forthwith shall be divested from the producers thereof and become absolutely vested in and be the property of the Board." Any further Marketing Act would be of a still more restrictive nature.

Mr. W. J. Black (Mangrove Mountain) said that the Premier had desired the fruitgrowing industry to be organised. This Defence Association had already organised the citrus-growing industry. The organisation covered all citrus growing districts in the State and contained the great majority of growers.

Mr. F. Bryant (Mangrove Mountain) said that they had organised on the lines of the Marketing of Primary Products Act, that is they were sectional. The Fruitgrowers' Federation was general, not sectional.

Discussion arose over the Marketing of Primary Products Act, and it was resolved "that the Minister for Agriculture be requested to take steps to amend the Marketing of Primary Products Act so that no Boards be constituted unless 75 per cent. of the producers of any particular product are in favor of the constitution of a Board for that product."

It was pointed out that a 51 per cent. majority of votes polled could create a Board that would hamstring the whole industry.

It was resolved "that the Secretary should ask the Department of Commerce that the refund of 6d. per case of 1934 exports should be made direct to the growers concerned or to an Association of growers nominated by them."

Citrus Fumigation

**Copy of Letter received from J. E. WARD, Esq.
of Griffith.**

Messrs. Houghton & Byrne,
2 Bridge Street, Sydney.

Dear Sirs,

The allegation in circulation (particularly in Leeton, N.S.W.), that I have abandoned Calcid Briquettes in favour of another form of Calcium Cyanide, is without an atom of foundation, and is absolutely false.

This season I am fumigating fifty acres of my citrus groves with Calcid Briquettes.

To date, using two Calcid machines with two batteries of tents, thirty-five acres have been fumigated on which nothing but Calcid Briquettes have been used.

Yours faithfully,

J. E. WARD

Yoogali, N.S.W., Feb. 13, 1936.

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Oranges and Potatoes

Regrettable Clash with New Zealand

That the unfortunate embargo placed by New Zealand upon Australian Oranges should be mutually reviewed, and repealed, was submitted by Mr. J. Francis (Qld.), in a recent address before the Commonwealth House of Representatives. According to the "Hansard" report, Mr. Francis summed up the position as follows:—

"I desire to make a few observations in regard to the disabilities from which the citrus growers have suffered. Had not trouble developed between New Zealand and Australia over the interchange of primary products we would not have found it necessary to be continually asking Parliament to provide assistance to support this industry. This Bill provides for further assistance of 6d. a case on all Oranges exported during 1934 to countries other than New Zealand. Last year a bounty of 2/- a bushel case was provided in respect of Oranges exported overseas. In 1933 and again in 1934, legislation was passed providing for a guaranteed price of 13/- a case on all citrus fruits exported to the British market, in addition to which, in 1934, only 5d. a case, paid by the growers for all-risks insurance on their consignments, was reimbursed to them by the Government. At that time £20,000 was provided on the Estimates for the purpose of meeting the guarantee of 13/5 a case. Owing to amounts collected in respect of insurance, actually, only £10,000 was expended. Out of the remaining £10,000 it is proposed to provide this bounty of 6d. a case in respect of exports made in 1934. In view of the serious disorganisation and loss of markets that have overtaken the growers because of circumstances beyond their control, I support this measure."

To a small extent a market for their product is now being developed in Great Britain. In 1933 they exported 97,000 cases, and in 1934 the quantity was increased to 217,000 cases. An entirely new market is thus being opened up, and the action of the growers has been forced upon them because of the loss in 1932 of the market in New Zealand through the embargo placed upon the export to that Dominion of fresh fruit and vegetables. New Zealand imposed this embargo, no doubt, by way of retaliation because of the Commonwealth's embargo against the importation of Potatoes from New Zealand. The embargo on citrus fruits was relaxed to some extent in 1933 and 1934 to permit of the importation from South Australia of a certain

quantity of Oranges, but steps should be taken immediately to secure its permanent removal. Prior to its imposition our trade with the Dominion in fresh fruit and vegetables alone was worth in the vicinity of £250,000. To-day New Zealand is importing Oranges from Japan at 30/- a case and from California at 37/6 a case; whereas from Australia they could be sold profitably at 15/-.

"That is no reason why we should lose a valuable market close to our shores. The Government should at once resume negotiations with the Dominion authorities with a view to the removal of the embargo. Scientists from Australia and New Zealand have in conference investigated the subject of disease in Dominion Potatoes, and have clearly indicated that there is no justification for the present trade restrictions. Australia can more than supply its home market with Oranges, and an expanding overseas market is essential for the success of the growers. The keenest competition has to be met in the markets of the United Kingdom. In Great Britain 20,000,000 cases of citrus fruits are consumed annually, but it is difficult to compete with other countries which have been long established on this market. It is unfortunate that our growers have to bear the expense of marketing their fruit on the other side of the world when they might enjoy a profitable market in New Zealand. Under schedule "B" of the Ottawa agreement Australian Oranges receive a preference in Great Britain of 3/6 per cwt. from April 1 to November 30 in each year. This preference, with the addition of the bounty to be paid, should help the industry ultimately to establish itself in the British market. With the removal of the restriction imposed by New Zealand on the marketing of our citrus fruits there, and with the new market in Great Britain, the industry should enter a new era of prosperity. I hope that a member of the Government will promptly be despatched to the Dominion for the purpose of securing the removal of the embargo."

Senator Pearce has since stated that the Commonwealth Government will immediately take steps to reopen negotiations with New Zealand in an endeavor to restore the Australian citrus export trade with the Dominion. In speaking upon the subject, Senator Hardy stated that, in his opinion, no real stability in the export field could arrive until Australian citrus growers could dispose of their product in New Zealand.

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Citrus in N.S.W.

Navels Light, Valencias Fair.

THE LATEST REPORT regarding N.S.W. citrus crops received early in April from the N.S.W. Dept. of Agriculture, is as follows:—

Now that the fruit is sizing up it is apparent that the Navel crop in the Gosford district will be lighter than previously anticipated. Very light yields are in prospect from trees over ten years old, noticeably in groves around Matcham and Holgate.

Valencias generally are better than Navels, but still the crop will not reach earlier estimates.

Reduction of the numbers of Common Orange trees continues, growers preferring to remove rather than rework them as most trees are aged. The general inclination is to replant with Lemons.

Fruit in Hawkesbury River orchards, with the exception of that on old trees, is reported to be filling well.

Navels are beginning to color in the earlier parts of the Kurrajong district, and some marketing should commence towards the close of April. The fruit is showing plenty of size, but the crop is patchy.

Harvesting of Valencias is still in progress at Bilpin, and on the Kurrajong Heights, and although late in the season the fruit is of good quality; fair to medium yields should be obtained from the new season's crop. Common Oranges are developing well and should attain a satisfactory size, but Sevilles are only lightly cropped.

A good crop of Lemons is to be seen throughout the district, and as development is progressing favorably, suitable sizes should mature. It is expected that harvesting of Imperial Mandarins will commence in the Penrith portion of the district towards the end of April.

The fruit of the medium to light crop of Navels at Griffith is likely to attain large size and should be of good quality. Some settings of Valencias are showing up better than was formerly expected and medium to good yields are indicated.

A fairly large quantity of last season's Valencias was harvested at Leeton during the month, the bulk of the fruit going to Melbourne markets.

IS CITRUS DECLINING?

New Groves Not the Remedy.

If the citrus industry is declining because of premature weakening and health of the trees, the remedy for the loss on the capital of over £7,000,000 invested is not to be found in increasing the plantings, but in preventing a decrease in the yield, traceable to poor development of trees, according to views expressed by Mr. E. S. West, Research Officer at Griffith (N.S.W.), in the "Queensland Producer."

The Victorian Department of Agriculture, he stated, has drawn attention to the serious extent of the trouble. The position in that State is still bad, and in 1935 the Department estimated that 10 per cent. of trees had gone out of production in the past three years.

In the New South Wales coastal and hills districts (the most important Valencia and Commons areas in Australia), recent inspection had shown that citrus decline was particularly severe. This season's adverse conditions would probably accentuate the position.

The Murrumbidgee plantings were relatively young, but many were already showing pronounced deterioration. In the last two or three years this had become much more evident. At the present rate of decline it was considered doubtful if more than 50 per cent. of mature trees would be maintained in profitable production.

The loss of trees was being made up by planting new groves. This was obviously an expensive and uneconomic procedure, and left the problem still unsolved. Citrus production was rendered much more costly, and this reacted against the settler, the State, and the consuming public.

In irrigation areas, where capital costs were so high, national expenditure was greatly increased. The development of new areas was particularly expensive when large amounts were written off settlers' indebtedness, because of tree failure.

Citrus decline had been responsible for a large proportion of re-valuation losses on the Murrumbidgee irrigation area and other irrigation areas. The fact that many features associated with that failure were not adequately understood gave point to the necessity for botanical work to supplement present soil and irrigation investigations at the research station.

Sydney Royal Show

Choice fruit was on view at the annual Easter Show of the Royal Agricultural Society of N.S.W.

The principal display was that of pyramids of fruit.

The judges were as follows:—Apples and Pears, Mr. J. M. Arthur, Hawkesbury Agricultural College, Mr. D. D. Atkins, export department, Department of Agriculture, Sydney, Mr. W. H. Broadfoot, N.S.W. Department of Agriculture, and Mr. C. G. Savage, N.S.W. Department of Agriculture; other than Apples and Pears, Mr. J. M. Arthur, Hawkesbury Agricultural College, and Mr. R. J. Benton, N.S.W. Department of Agriculture.

Varieties of Apples included Cleopatra, London Pippin, Granny Smith, Jonathan, Dunns, Rome Beauty, Delicious, Tasmania, Stayman, Yates, and the prizes went to Vanzella Bros., C. C. Barberie, H. Bird, J. S. Cripps, R. H. Charles & Sons, S. A. Stanford, R. M. Jones, M. Martin, Lewis Bros., and the prize for collection of commercial Apples was won by P. M. Baaner.

For Pears the varieties were Packham's Triumph, Winter Cole, Beurre Bosc, Josephine, Winter Nelis, and among the prize winners were J. S. Cripps, C. C. Barberie, R. H. Charles & Sons, H. Bird.

Export classes for Rome Beauty, Granny Smith, Jonathans, and Democrat Apples were won by P. M. Baaner, D. E. Mitchell, H. Bird, C. C. Barberie, W. J. I. Nancarrow, R. M. Jones, Vanzella Bros., Hudson Bros. Export classes for Pears were also arranged, including Packham's Triumph, Winter Cole, Beurre Bosc, Josephine, Winter Nelis, and among the prize winners were J. S. Cripps, C. C. Barberie, R. H. Charles & Sons, H. Bird.

Other fruits in the show were Persimmons, Grapes, light and dark, and there was also a section for fruit not specified in other classes. Among the winners for these were J. Hitchcock, B. Milgate, T. W. Milgate and S. E. Allen. For Quinces and Lemons R. Mobbs and Morris & Sons were awarded the prizes.

Our Juniors' Page

My dear Smilers,

Here is just a short letter from Uncle Joe to say that I have been pleased to receive letters from my junior friends.

As time goes on we will develop some competitions as I want more of the young people in the fruit-growing industry to link up with our Smilers' Club.

In the meantime I would so like to hear from you, and if you give me the date of your birthday I will send you a packet of seed as the happy day comes round.

I am particularly desirous of knowing about your orchard, citrus grove or vineyard, also your school and your hobbies.

Just lately I have been receiving letters from other parts of the world and have been saving the stamps. If any of you are interested and would like some of these stamps, please write and let me know and I will send them along.

Now, cheerio, Smilers, I shall be glad to hear from you.

Much love,

UNCLE JOE.

A QUEENSLAND "SMILER."

Dear Uncle Joe,

I would like to become a member of "Our Junior Section." My birthday is on the 25th of October, and I am 13 years.

I live on a farm 2½ miles from the Mutarnee siding. The chief things we grow and sell are oranges, lemons, mandarins and pineapples. We grow custard apples, mangoes, papaws, and bullock-hearts for our own use. Last year the district was in a bad way, owing to the drought. This year we have had plenty of rain, and the creek was in flood for several days. A creek runs by our house, but, as it is salt water, it is of no use to the farm. The name of this creek is "Crystal Brook."

The beach is about a mile from our place. I think "Smilers" is a good name, because we all can be happy when we want to.

Here are some riddles:

Q.—Why is a shrimp like a Member of Parliament?

A.—Because it has M.P. at the end of its name.

Q.—What kind of robbery may be said to be not dangerous?

A.—A safe robbery.

Q.—What relation is a doormat to a doorstep?

A.—A "step-farther."

I remain, yours faithfully. — Anne Bayliss.
Mutarnee, Ingham Line,
North Queensland.

7/4/36.

[Delighted to hear from you, Anne—I've popped your name in my "Smilers" Birthday Book. Your letter was a most interesting one; it will give me pleasure to send you a packet of seeds on your birthday. Write again soon. Much love.—Uncle Joe.]

THE YOUNG FARMERS' SECTION AT THE RECENT PAKENHAM (VIC.) SHOW.

The Young Farmers' section at the recent Pakenham (Vic.) show, created much interest. The exhibits were of surprisingly high quality. The awards were:

Fruit—Tray of Apples: Grace Kennedy 1, Vera Allen 2. Apple packing: R. Sapwell 1, K. Warner 2, M. Quick 3. Three cases of Apples pack-

ed for export: Army Road 1, Pakenham 2. Case of Apples packed for export (Army Road Club): V. Priest 1. Gerrard Shield: Grace Kennedy 1, Grace Goldsack 2, Wallace Reid 3. Essay on Apple growing: J. Robinson 1, J. Risely 2.

In the pig section, Army Road won for group of pigs; Vera Allen won the Widdicombe Cup and other prizes; other prize winners included R. Sapwell, R. Priest and M. Walden. For calves the prize winners were R. Ellett, F. Stephens, C. Webster, Edna Smith, L. Lindsay, A. Walden, F. Shelton, J. Savage, F. Lansdown, G. Lansdown, J. Carney, D. Smith.

C. J. Coulson won most prizes in the poultry section. F. Stevens came second for light breed in the open section. For sheep and miscellaneous the prize winners were Ronald and Rita Webster, Stella and Vera Priest, K. Warner and Vera Allen.

YOUNG VICTORIAN ORCHARDIST SUCCEEDS.

The successful efforts of a young Victorian orchardist named Birnie Burgi, of Wandin North, Victoria, who has worked and developed during difficult times a successful orchard, should be an example and inspiration to all young Australians.

His father, Cr. Edmund Burgi, one of the pioneer orchardists of the district, died in 1924, when Birnie was about eleven years of age. When fourteen years of age, Birnie, being the eldest son, took charge of the orchard for his widowed mother. With the advice of neighbors and Government orchard supervisors who visited the district at intervals, this young lad did all the work on the place. The orchard at that time was about ten acres in extent; each year additional land was cleared and planted and the orchard, which now covers thirty acres, is still being extended. Apples, Peaches and Lemons are grown.

For several years Birnie Burgi did most of the work himself, with help only when the fruit was being harvested; he now has a grading and wiping machine and pays particular attention to the grading and packing of his fruit, and it stands to his credit that for the past five years not a single case of fruit packed by him for overseas markets has been rejected. His progress is due to thoroughness in every department of

ACKNOWLEDGMENT.

The illustration showing Strawberries planted among Passion Vines, which appears on page 23 of this issue, is by courtesy of the Victorian "Journal of Agriculture"

chard work. His implements and spray pumps are overhauled by himself and kept in good order. His success in combating orchard pests and diseases is due to timeliness and thoroughness in spraying, and attention to general orchard hygiene.

During the past nine years many difficulties have been encountered in the fruit industry, but in the case of Mr. Burgi, who is now aged 24, same have been met by strict attention to all details of orchard practice, and this is an example of the satisfactory results which can be derived from the extra attention to these details which make the difference between success and failure. We wish him all success in his future efforts.

Fruit Packing Instruction in Queensland

THE FRUIT PACKING CLASSES conducted by the Queensland Department of Agriculture are greatly appreciated. The Department is to be congratulated on its enterprise.

The following information, compiled by Mr. Jas. H. Gregory, instructor in fruit packing to the Queensland Department, is reproduced with illustrations from the Agricultural Journal in that State.

In conjunction with the Department of Public Instruction, packing classes are held at many schools. At these classes pupils of twelve years of age and over attending the local school are taken into the class for training. It is felt that, generally speaking, pupils under this age are too young. Classes are then formed of, if possible, not more than eight (8) pupils. More than eight in a class makes the class harder to manage by one teacher, with a consequent drop in efficiency. The class is then given instruction as regularly as possible—once a week if the means are available. Each lesson is of one hour's duration. At the first class which is held at the school, the theoretical side of packing is given, essential notes are taken, and the pupils are generally prepared for the practical work. For the pupils to obtain the necessary practice in this, a grower's farm within reasonable distance of the school is then found. Many growers

Chevallum Nambour Rural, Yandina, Buderim, Howard, and Gayndah schools have annual classes. At the Royal National Exhibition each year a packing competition is held amongst the above schools for a shield to be held for twelve months by the winning school. The entry, which comprises ten cases packed by a team of five pupils, is a keenly contested one. By winning this year the Mapleton school retained the John Macdonald Shield for all time. This shield was competed for over a period of eleven years, the school winning the shield the most number of times to retain it for ever. To replace the John Macdonald Shield another has been donated by Mr. H. Walker, M.L.A., for future competition. The William Rowlands Shield is also competed for by North Coast schools at the Maroochy Agricultural Society's annual show. The competition for this shield was instituted in memory of Mr. William Rowlands, who was the first Government Packing Instructor in Queensland. Examples of the excellence of his work are still to be seen throughout the State, many growers having become good packers through his efforts. In addition to the classes for the younger generation, visits are paid to orchards and plantation for the purpose of first-hand instructions to growers. Observations and checks are made of consignments on the markets and in cold storage for growers



Competitive display of packed Citrus fruits, Brisbane Royal National Exhibition, exhibited by Citrus Packing Classes in competition for the John Macdonald Shield. (Block, courtesy "Queensland Agricultural Journal.")

have shown a fine spirit of co-operation in assisting the Department by making available their farms, and providing the necessary fruit and materials, without in many cases having the incentive of having a member of their family as a pupil in the class. Of course, they get a return of having many cases of fruit packed up for them ready for market. The classes for any particular kind of fruit end with the season. Generally, up to six lessons of one hour each are given to the classes. It has been said that the pupils are not expert packers when a season of classes ends. Reasonable packers of experience realise that they cannot expect the children to be expert packers after only six hours of broken tuition, but with children of average intelligence excellent results have been obtained in laying the foundation for good packers. After two seasons of tuition, covering, say, ten to twelve lessons, many pupils are quite expert.

At the present time, classes are held in the citrus areas of the North and South Coasts, and Howard and Gayndah districts. Tamborine Mountain, Elimbah, Mapleton, Flaxton, Montville, Palmwoods, Woombye,

anxious to know how their consignments, when packed, keep in transit and cold storage. Experiments in storage, various types of packing, improved boxes, and packing materials are constantly being made. Packing charts and pamphlets on packing, storage, and marketing of all fruits are published or in course of publication, and may be obtained free on application to the Under Secretary, Department of Agriculture and Stock, Brisbane. Applications for service should also be sent to the same address. For this short résumé of the operations of the marketing section of the Department's Fruit Branch, it can be seen that there is no need for growers to remain in ignorance of the latest marketing and storage methods.

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AMONG THE RETAILERS

New Season Navel Oranges—Price Cutting Folly—Monthly Meeting—How to Increase Business

NEW SEASON NAVEL ORANGES.

[The following information is to hand from Mr. E. W. Thompson, Secretary Melbourne & Metropolitan Retail Fruiterers' Association.]

THE new season Navel Oranges having arrived from the early districts, retail fruiterers should endeavor as early as convenient to find out what brand or what grade is most suitable for his customers, they will also find it most advantageous to concentrate on the one or more brands they decide on. Experienced fruiterers are fully convinced that the majority of consumers are more particular about the flavor and quality of citrus fruit than any other, and when once suited to their palate, have a dislike to any change whatever.

Another reason why they should concentrate on only one or two brands is because they get to know the pack and the agents handling them get to know their customer's requirements and will do their best to keep him supplied with same.

Whatever brand or district the fruiterer decides to rely on, he will be well advised not to label or mark them under any misleading mark, as by so doing he renders himself liable to a very heavy penalty. The Agricultural Department will take drastic action against any person marking or labelling fruit of any description under any other than the genuine brand, and it is considered a very serious offence to wrap inferior Oranges in wrappers off other Oranges.

Owing to Oranges from some districts being marked by shopkeepers as grown in other well-known districts with a higher reputation for quality, it is quite possible that before long many of the best citrus growers will be branding their individual Oranges with their name or brand on to prevent some of the fraudulent practices that have been carried on in the past.

The Recent Rains.

Notwithstanding the long-drawn-out dry summer and the fears expressed by so many growers and retailers of an apparent vegetable famine approaching, there seems to be no cause to worry judging by the improvement in both quantity and quality of most varieties of vegetables in season being marketed from day to day at the Victoria Market at the present time.

With the exception of Potatoes and Onions, which are fairly expensive, and probably will be more so during the next few months, there has been wonderful growth in all other varieties of culinary vegetables, and speaks volumes for the recuperative state of the market gardens from which the metropolitan and other supplies are drawn.

Consumers generally within a limited distance from Melbourne, and one or two favorable provincial centres, should appreciate the continuous supply of both fruit and wholesome

vegetables they are able to secure throughout the year, compared with those less fortunate persons residing in the Mallee and other dry districts, without either rainfall or irrigation during the summer months, and who have to pay extra for the transport of those commodities from various other places.

Even Victoria (at one time termed the "Garden State") is not entirely independent of the other States for her supplies, as we receive large quantities of vegetables from all the others. Swedes from Tasmania, Celery from South Australia, Peas and Beans and other varieties from Queensland and New South Wales, and even Tomatoes from each of them, so with all our resourceful land and climate, we also should appreciate the assistance we receive, enabling the more fastidious to have Peas, Beans, Tomatoes, and other delicacies the whole of the year round, something that was not thought possible a few years ago. Of course the advent of the glasshouse for Tomatoes has also been of great assistance as many of the taxes we were led to believe were only emergency taxes and would be removed as soon as possible.

Price Cutting Folly.

Nothing is so easy as to cut prices, and nothing is so hard as to get them back to a profitable level after once they have been pulled down.

Price-cutting below a reasonable margin of profit as a means of gaining an advantage over another trader is absolute folly. A retailer brings down his prices and his competitors are then forced to follow suit, the result being that all parties are just where they started, much lower in pocket and forced to make their living on a smaller gross income than previously, the only ones to gain any advantage through such folly being the customers, which in most instances is only temporary. And at this stage the price-cutter generally begins to realise he is making no profit and in order to benefit himself he resorts to the handling and selling of inferior goods, his competitors doing the same to keep with him, with the final result the businesses are scuttled, cannot keep afloat, and as a rule the owners go down to the bottom with them.

An eminent man once said: "There is no more virulent and contagious disease than that of price-cutting." Words of wisdom undoubtedly, which most business men of integrity will endorse. Instances are to be seen almost daily, when once the germs have obtained a lodgment they seem to multiply so rapidly that the whole district becomes crippled, and nothing gained.

Remember the old saying: "The laborer is worthy of his hire," and good service and quality goods should also be worthy of reasonable reward, and further, if the reward is not there the service as well as the quality must deteriorate, and any business conducted in continuance of these practices must soon cease to be a

business at all. Thus illustrating the old adage: "What shall it profit a man if he gains in volume of sales, but loses in total profits?"

The public are so unreasonable that they expect a shopkeeper to work for nothing.

Retailers' Monthly Meeting.

At the last monthly meeting of the Executive of the Retail Fruiterers' Association, a request was received from the Taxpayers' Association, asking for their co-operation and assistance in a deputation to the Premier to endeavor to get a reduction of the taxation the public are being forced to pay of late. Delegates present were unanimous that the time was opportune for a reduction as many of the taxes we were led to believe were only emergency taxes and would be removed as soon as possible.

The meeting decided to comply with the request, and Mr. E. Mawdsley and the Secretary, were appointed to represent the Association on the deputation. There is no doubt that the heavy taxation the public is called on to pay is having a very deterrent effect on the recovery of trading activities.

Replies were also received from the Southern Fruitgrowers, the Market-Gardeners' and also the United Berry Growers' Associations, that they approved of the proposal to form a Council of the different organisations whose members rely on the Victoria Market for the disposal of most of their produce. The Wholesale Fruit Merchants and Retailers having previously decided in favor, a preliminary meeting of the appointed delegates to the Council will be held at an early date. It is expected that the Flower Growers' Association will also decide to be represented on the Council.

It was also decided at the meeting to engage the Manchester Unity Hall, Swanston-street, on Wednesday, June 17, for the Retail Fruiterers' Social and Dance this year. Tickets will be available from all members of the Committee.

How to Increase Business.

No retailer can increase the number of people who use the footpath in front of his shop. That is determined by the street in which his shop is situated; but he can increase the number of people who will pass through his doors, and that determines the amount of business he will do and the profits he will make.

Every housewife who passes a retail shop is a prospective customer, and every retailer should consider her as such, and give more thought and study to ways and means to induce her to enter, and having succeeded in getting her into his shop, he should use all his powers of salesmanship and personality to lead her to believe that his shop is the one and only one in which she can be satisfactorily served. If he can make her feel that he is just as essential to her as she is to him, he will have achieved something worth while.

We cannot go out into the street and take a passer-by by the arm and drag her into the shop, but we can have the interior of the shop so neatly and attractively arranged and the goods so tastefully and temptingly displayed that she will want to come in and will look forward to her next visit with pleasant anticipations.

We can arrange the windows so attractively with appetising fruits so that she will want some of the same quality as that displayed, and will come in for it, and (this is import-

ant if you want her to come again), see that she gets it.

We can render such an efficient, courteous, service, that she will choose our shop in preference to others where the service is not so good.

We can advertise intelligently, and by suggestion and persuasion, induce people who have not before visited our shop to give us a trial.

There is nothing new in these suggestions, retailers have heard them time and again; they are old as the hills. All will admit that they are sensible and should be effective, but how many have attempted to carry them out? Too much trouble. Cannot be bothered, and other trumpety excuses are heard when business fails.

The fault lies in the fact that we are too passive instead of being more active. We read and hear of new practices and ideas, and agree that they should be of value and helpful to us in our business — and then forget about them.

We learn of new means and methods being successfully used by other retailers to build up their business and agree that these may work out in our shops, but we fail to try the experiment.

We see our trade, or some of it slipping away from us, and although we think changes in methods might be beneficial to us, we hesitate to take the plunge. There should be no such hesitation as time and tide wait for no man. Take the initiative and infuse more energy to put new ideas into practice and watch the results.

NITROGEN AS A PLANT FOOD.

NITROGEN is one of the most valuable plant foods, and plays a very important part in the nutrition of all plant life. An abundant supply of readily available Nitrogen greatly increases the growth rate and promotes a vigorous growth of healthy foliage, which is so essential for the well-being of the plant. Nitrogen exists in the soil in a number of different forms, the majority of which are highly complex chemical substances which cannot be utilised by the plant. These complex substances are gradually decomposed by soil bacteria, and the Nitrogen is eventually converted into the form of soluble Nitrates, in which form it is readily absorbed by the plant roots.

In addition to its high fertiliser value, Chilean Nitrate of Soda, on account of its chemical composition, has a distinct beneficial effect on the soil, as it conserves the exchangeable calcium or lime and prevents the development of acid soil conditions.

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Export & Commercial News

OVERSEAS MARKETS

Prospects Variously Reported

Eastern Ports.—Upon his arrival on April 3, Mr. F. R. Van Esveldt is reported to have stated that, although the dried fruits trade is well organised in Australia, from the exporter's point of view, the organisation for disposing of Australian exports in the East is far from satisfactory. The Australian Trade Commissioner, Mr. Critchley, was endeavouring to overcome this condition, and he hoped that better conditions would prevail in the near future.

A conference of importers is being arranged, when the claims of Australian Dried Fruits will be pressed, and a marketable basis for imports will be discussed.

One disadvantage that he discovered was the irregularity of shipments in the past, which either flooded or understocked the market, and that there was no margin of price between the small and the large importer. He believes that, under better conditions, the sale of Australian dried fruits can be substantially increased.

India.—According to Mr. C. Lawton, who handles large quantities of both American and Australian dried fruits in India, and who recently arrived in Australia, Australia would benefit by an alteration of its consignment system.

One thing he mentioned was that Indian merchants prefer to handle goods covered by the name of a trading concern which has proved itself, rather than under various little-known names of Australian packers. The well-known brands are eagerly sought, and the less-known brands are only taken in small quantities when the former are not available.

Mr. Lawton advocated a central packing shed on American lines, possibly under Government supervision. In this way all fruit of the same grade would have an equal chance on the market, because buyers would be able to rely on a grading mark rather than on the name of an exporter.

Labelling was another matter on which Australians could learn a good deal from the Americans, Mr. Lawton said. Australian labels were often printed in light colors, which showed up every spot and dent that the container might receive in transport. For this reason, Australian

goods sometimes had the appearance of being damaged.

American labels were printed in dark colors, and showed up to much greater advantage when landed.

Shipping freights and the tendency of some exporters to supply goods below the sample standard were two of the disadvantages under which Australian goods labored, Mr. Lawton added.

This rather supports recent criticism tendered to Dr. Earle Page when conferring with Europeans resident in India during his present visit en route to England.

China: The Australian Trade Commissioner in China (Mr. V. G. Bowden), in his recent report on the prospects of marketing Australian Prunes in his territory, stated that Australian exporters would have to quote very

low prices in order to obtain a footing in the market, owing to the fact that practically the whole of the imports of prunes are derived from the United States of America.

The price factor being such an important consideration in this market, the most economical and popular pack for prunes is in bulk boxes of 25 lb. net. Retailers sell over the counter from the box in quantities required by the customer. The trade in tins and cardboard cartons is mainly confined to well-to-do Europeans, as these packs are too expensive for the average consumer.

So far as the popularity of Prunes among the Chinese is concerned, the Trade Commissioner states that the consumption is small, firstly because they prefer dates which are produced in China, and secondly because the low purchasing power of the majority precludes them from buying imported prunes to any extent. Prunes do not represent as saleable a commodity as raisins, which can be packed in very small quantities for retailing amongst

the poorer class of Chinese. In fact, the consumption of prunes is mostly confined to Europeans, who represent only a very small portion of the population, to hotels and apartment houses, and to Chinese restaurants, which use prunes in the preparation of certain dishes.

So far as grades are concerned, imports in bulk range from 20/30 per lb. to 90/100 per lb., but the most popular grades are the 60/70 per lb. and 70/80 per lb. Large prunes are not required except for special purposes, and the kind of prune preferred by the trade is one which is firm without being hard.

The Commissioner, in conclusion, states that there is much competition for the limited market for prunes offering in his territory. A number of importers hold agencies for Californian packers, and are not interested in obtaining supplies from Australian exporters. Cheapness in price is most important, and for this reason the possibilities of doing business on a large scale in tinned and fancy packs are not promising.



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MELBOURNE SYDNEY
NEWCASTLE DEVONPORT

U.K. FRUIT PRICES.

Major H. Dakin, Australian Agent for Geo. Munro Ltd., London and Manchester, advised on April 16 having received the following cable message from his principals: — "Moldavia," "Buteshire," "New Zealand Star," generally good condition. Coxes, 14/- to 20/-; Worcesters and Jonathans, 8/- to 11/-; Ribstons, 8/- to 9/-; Dunns and Afristons, 9/- to 10/6. Apple trade slow.

On April 27 a cable was received: — "Slightly better feeling in Apple market, fruit moving more freely."

"Hobson's Bay," "Orontes," "Mooltan," "Imperial Star," "City of Manchester." Fruit generally good, Victorian and Tasmanian, Jonathans, Cleos, 9/- to 10/6; Dunns, 9/-; Worcesters, Delicious, 8/- to 9/-; Ribstons, 7/6 to 9/-; Alfristons, 8/6 to 9/6; French Crabs, 8/6 to 9/-; Coxes some bitter pit, 11/- to 17/-.

Pear trade fair, "Orontes," Tasmanian cases Packhams, Bosc, 12/- to 13/-; Comice, 15/- to 18/-; Capiamont, 10/- cases; Bosc, 10/- to 11/-; Comice, 14/- to 16/- Trays, Comice, 7/- to 7/6; "Mooltan," "Imperial Star," Sydney, Bosc, 1/2 cases, 10/6 to 12/-. Sydney Granny Smiths, 10/- to 14/-."

U.S.A. CITRUS CROP.

Lighter Than Last Season.

A N official report has been received from California, showing the production of Oranges, Grapefruit, Lemons, and Limes for 1935-36, as compared with 1934-35. The number in brackets is the quantity for 1934-35.

California and Florida are the principal Orange producing States.

California's 1936 estimate is 34,392,000 bushels (46,086,000), and Florida 16,000,000 (17,600,000). The total estimated production from the seven main citrus growing States for 1936 is 51,521,000 in 1935-36, as against 64,937,000 in 1934-35.

Grapefruit Also Light.

For Grapefruit, Florida is by far the most important State, and the estimate for 1936 is 10,500,000 (15,200,000). The other three States — California, Arizona, and Texas, estimate 7,445,000 (6,157,000) altogether. The total estimate for the four States is 17,945,000 for 1935-36, as against 21,357,000 for 1934-35.

California's Lemon production estimate is 8,000,000 for 1935-36, compared with 10,506,000 for 1934-35.

Florida is the main State for Limes, and estimates 10,000 in 1936, as against 8,000 last season.

THE LONDON MARKET.

In a letter to the Editor relative to the importance of London, Capt. A. W. Pearse states that the Port of London Authority is established to render efficient service to traders, in the receiving, handling and distribution of the produce. After providing for low interest on bonds, all the profits go into reduction of rates and improvements. Charges have been reduced three times since 1925. A population of 18,000,000 people is served within 100 miles of London.

Tasmania

STATE FRUIT BOARD.

"Good Grade" Apples.

At the meeting of the Tasmanian Fruit Board held at Hobart on April 24, the following resolution was carried: "That 'good grade' be gazetted immediately for the interstate trade."

The Chief Horticulturist (Mr. Thomas) suggested that in adopting the "good grade," provision should be made for a maximum blemish of $\frac{1}{4}$ in. The motion was amended to provide in the specifications for a $\frac{1}{4}$ in. blemish.

Extra Fancy Pears: It was agreed on the motion of Mr. Abel, seconded by Mr. Taylor: "That the minimum size for extra fancy grade Pears be raised from 2 in. to $2\frac{1}{2}$ in. in order to comply with the N.S.W. regulations."

Eastern Trade Committee: A letter was received from the Premier (Mr. A. G. Ogilvie, K.C.), informing the Board that the Prime Minister (Mr. J. A. Lyons) had approved of the appointment of Mr. W. H. Calvert, M.L.C., as representative of the fruit industry of the Tasmanian section of the Eastern Trade Committee.

TASMANIAN FRUIT BOARD APPROVES.

Sydney Agents Panel.

During an extensive tour of Tasmania, Mr. L. J. Jenkins, President of the N.S.W. Chamber of Fruit and Vegetable Industries, took the opportunity to see the State Fruit Advisory Board, which resulted in that body accepting the Chamber as its official body in Sydney, and that no other selection will be made at present with regard to the selected agents panel. All members at present doing business with Tasmania are to be given an opportunity to prove their value to Tasmanian growers and the Board before an actual panel of agents will be selected. The Board, in officially recognis-

ing the Chamber, has promised to recommend the personnel of the Chamber's Tasmanian section to the Tasmanian fruitgrowers.

Mr. Jenkins said it was also pleasing to note that the Tamar Valley Co-op. Society had also recognised the Chamber, and its panel of agents will meet regularly at the Chamber's Sydney offices. During the trip among the growers, Mr. Jenkins noted the comprehensive character of the re-working of unwanted varieties to

popular varieties that has been taking place in Tasmania.

Mr. Jenkins stated that the Sydney Market had long been used as a dump for unwanted varieties, and it was essential to the economical development of Tasmanian business, that Sydney be provided with the varieties that buyers require. If Tasmanian growers study Sydney's trade demands and necessities, a much improved business between the two States can be looked forward to.

Plant Protection by the aid of Therapeutants.

Important New Book by Dr. G. H. Cunningham.

The researches of G. H. Cunningham, D.Sc., Ph.D., F.R.S.N.Z., of N.Z., into fruit pest and disease control, have won for him a distinguished place among scientists, and his new book with the heading as above, will be received with pleasure and gratitude by scientists and practical fruit-growers. Dr. Cunningham is the Director of Plant Protection Services, Plant Research Station, Palmerston North, N.Z.

Two other important books also stand to the credit of Dr. Cunningham: these are "Fungus Diseases of Fruit Trees in New Zealand" and "Rust Fungi of N.Z."

This new book: "Plant Protection by the Aid of Therapeutants" is illustrated, and contains some 240 pages. The book is divided into six sections:—

The first section is on sprays and spraying, including chapters on the sulphur series, the Polysulphide series, the copper series, the arsenate series, the oil series, plant extracts, spreaders, adhesives, suspensors and activators, and apparatus and methods of application.

Section two is on dusts and dusting, and gives the advantages and disadvantages and the method of application.

In section three, fumigants and fumigation are dealt with. Glass-

house fumigation, stored products fumigation, fumigation of nursery stock and vacuum fumigation, are explained, and with the information are illustrations of the various types.

The next section is devoted to disinfection of seeds, tubers, bulbs, and corms. Disinfectant agents used in treatment are fully gone into, namely they are copper and mercury compounds, formaldehyde, and heat therapy. Methods of application are dusting and liquid disinfection.

Soil disinfection and methods of application. Heat disinfection and chemical disinfection are contained in the fifth chapter, and the sixth and final chapter are miscellaneous, and include fruit washing, chemically impregnated wrappers, tree surgery, salicylanilide, and tables of weights, measures and temperatures.

Altogether, the book is a comprehensive valuable guide to all interested in the subject of plant protection.

[Copies may be obtained from the "Fruit World," Box 1944, G.P.O., Melbourne,—15/6 post free.]

Head Warden: "Ten prisoners have broken out, sir."

Governor: "Have you given the alarm?"

Head Warden: "I sent for the doctor. He thinks its measles."

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Market Notes and Prices

VICTORIA.

Market Report for April.

BETWEEN seasons trade was quiet. There was a fair supply of late Valencias, in fact, supplies were slightly heavier than usual for this time of the year. They sold at payable prices.

Most of the trading was in citrus varieties with late Grapes firming towards the end of the month. The quality of the latter was good, and the demand fair.

Oranges: Navel: Navels started coming in, but again growers picked too soon. The sugar content was poor, and only coloring allowed any reasonable acceptance. They certainly passed the required standards, but growers would be advised to delay picking at this stage of maturity.

Lemons: Supplies were good, but size and quality fell off towards the end of the month. Prices were only moderate.

Grapes are finishing. Good lines of Ohanez and Doradilla were available right up to the end of the month and the call for late varieties was fortunately satisfactory. Other varieties practically ended earlier. Prices were fair on the whole and, at report, they were holding. The condition was generally good, better than earlier in the Grape season and the rains seemed to have assisted rather than to have harmed them.

Grapefruit: New season's fruit just coming in but again they are being picked too soon. The same old rush for the first markets. On the whole it is doubtful if it pays.

Pineapples continued to hold requirements. Size and quality were steady, slightly on small side.

Bananas: Up and down, prices dropped in the middle of the month, otherwise satisfactory.

Celery: South Australian Celery was received in fair quantities and the demand was strong. The quality was consistently good and prices held around 14/- to 15/- for the best samples. In the last week the price dropped to 7/- to 10/-.

Peas and Beans sold well right through, not much fluctuation in supplies, fair prices ruled.

Apples: Sales remained steady, improving towards the end of the month. On low side at first they improved from the middle weeks.

Pears: Good varieties sold well at fair prices, but supplies were light, running out with the end of the month.

As the month closed, a few shipments of Queensland Mandarins appeared. These were of good quality and received a welcome at good prices.

Melbourne (1/5/36). — Wholesale fruit market remains dull. Good Apples were scarce and were in demand. Quotations were as follow (at a bushel case, excepting where otherwise stated):—Apples—Eating: Jons., 4/- to 6/-, few higher; Dels., 4/6 to 7/-, few higher; other varieties, 4/- to 6/-. Cooking, 2/6 to 4/6, few specials to 5/- and higher. Grapes, 4/- to 10/-, few special lines to 11/- and higher. Oranges—Navel: Washingtons, 12/- to 14/-, a few to 15/-, best counts; Thompsons, 12/- to 13/-. Valencias: Average standards, including N.S.W., 4/- to 9/-, a few to 10/-, according to counts; selected standards, to 12/-, a few to 13/-; specially selected, to 15/-, few higher. Ben-yenda Joffas, to 15/- and 16/-. Lemons—Average standards, 6/- to 8/-, a few to 9/-; good standards, to 10/- and 11/-, few selected to 12/- and higher. Grapefruit—Marsh's Seedless, standards, 10/- to 12/-, few selected to 14/- and 15/-, best counts; other varieties lower. Mandarins—Queensland Fewtrells, 10/- to 12/-, a few to 13/-; few special Emperors, to 15/- and 16/-, best counts. Pears—Dessert, 4/- to 7/-, a few specials higher; culinary, 2/6 to 5/-. Quinces, 3/6 to 5/-, few higher. Bananas—



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pany Ltd., Melb., Vic., Australia;
Pitts & Lehman, 129 Pitt St., Sydney,
N.S.W.; and A. J. Walshe & Co.,
Hobart, Tasmania.

Queensland (green): Sixies, 9/- to 10/-; sevens, 11/- to 12/-; eights and nines, 13/- to 14/- double case, few specials higher. Pineapples, Qld., 8/- to 13/- double case, few specials to 14/- and higher. Passionfruit, 8/- to 15/-, few specials higher. Tomatoes, 4/- to 10/-, few specials to 11/- and 12/-. Celery, Adelaide, 6/- to 10/- double case, few specials higher. Custard Apples, 4/- to 7/- ½ case. Green ginger, 4/- to 5/- dozen lb.

The Melbourne market manager of the Federal Citrus Council of Australia reports sales as follows:—Valencias—Average standards, including N.S.W., 68-75 4/- to 6/-, 84-112 6/- to 8/-, 126 up 8/-, a few 9/- and 10/-; selected standards, 5/- to 12/-, a few 13/-; specially selected, to 15/-, a few higher. Grapefruit—Marsh's Seedless: Standards, 10/- to 12/-; selected standards, 60-68, to 14/-, a few 15/-; 75-84, 13/-; 96-112, 11/-. Other varieties lower. Lemons—Average standards, to 8/-, a few 9/-; good standards, to 10/-, a few 11/-; selected, to 12/- a few higher. Navel Oranges—Thompson's, to 12/- and 13/- best counts; Washingtons higher. Mandarins—Fewtrells, 10/- to 12/-; Emperors, to 14/-; a few Mil-dura Imperials higher.

SOUTH AUSTRALIA.

Adelaide (29/4/36).—Apples (eating) 4/- to 5/- case, do. (cooking) 3/- to 4/-; Bananas 20/- crate; Figs 1/- case; Grapes (dark) 8/-, do. (white) 7/-; Lemons 8/-; Oranges (Common), 14/- to 16/-, (Poorman) 4/-; Passionfruit 20/-; Pears (eating), 8/- to 9/-, do. (cooking), 5/-; Pineapples 16/-; Plums (light) 5/-, do. (dark) 6/-, do. (Danson) 6/-, do. (Jap.) 6/- to 8/-, do. (Prunes) 6/-; Pomegranates 3/-; Quinces 2/6 case; Tomatoes 5/- to 6/- half case.

NEW SOUTH WALES.

Sydney (28/4/36).—The market representative of the Fruitgrowers' Federation of N.S.W. reports as follows:—Apples: Aromatic 6/- to 7/-, Cleo, 6/- to 7/6, Del. 7/- to 12/-, Demo. 5/- to 7/6, Duke of Clarence 5/- to 7/-, French Crab 6/- to 8/-, Geeston Fanny 6/- to 8/-, G. Smith 7/- to 10/-, Jon. 6/- to 9/-, few 10/-, King David 5/- to 8/-, London Pip-pin 5/6 to 7/-, R. Beauty 6/- to 8/-, Scarlet Pearmain 5/6 to 8/-, Sturmer Pippin 5/- to 7/-, Tasman's Pride 5/- to 8/-, Winesap 7/- to 9/-. Pears: B. Bosc 6/- to 8/6, Glou Morceau 6/6 to 9/-, Howell 6/- to 8/-, Keiffer 6/- to 7/-, Packhams 7/- to 11/-, W. Cole 7/6 to 12/-, Jos. 6/6 to 10/-, W. Nelis 6/- to 10/-. Bananas: N.S.W. and Queensland 11/- to 18/- trop. case. Custard Apples, Qld. 6/- to 7/- half case. Citrus: Grapefruit, N.S.W. 5/- to 8/- bush, U.S.A. 32/6 Cal. case; Lemons, N.S.W. colored 6/- to 10/-, Qld. colored 15/- to 19/- bush. Oranges: Vals., N.S.W. 6/- to 10/- bush, inland to 10/-. Navels, Qld. 15/- bush., N.S.W. new season 5/- to 7/-, few 8/-, White Siletta 3/- to 4/-, Joppa (Qld.) 11/-; Mandarins, N.S.W. Imperial 3/- to 5/- half case.

Comments on the Citrus Position.—Grapefruit: New season fruit is more plentiful, much of it very light in weight. Lemons: Increased supplies are now available and values have eased; 274 cases arrived from Queensland. Oranges: Valencias: Valencias are more plentiful, supplies coming from a number of sources. Values have been affected by arrivals of new season fruit. Navels: Most sales are about 6/- per bushel. White Siletta: Early in the week these sold in some instances from 6/- to 8/-, values are now definitely back. Mandarins: The supply of these is becoming more noticeable each day.

Grapes, N.S.W. inland, Gordo 3/- to 4/-, few 6/- half case, Cornichon 4/- to 5/-, few higher half case, Black Muscat 4/- to 6/-, few 8/- half case, Ohanez 5/- to 6/- half bush. Persimmons 1/6 to 3/-, few 3/6 half bush, Passionfruit, N.S.W. 4/- to 7/-, special 10/- half case. Pineapples, Qld. Queen 8/- to 12/- trop. case, Paws (Qld.), 11/- to 14/- trop. case. Quinces, N.S.W. and Vic. 4/- to 6/6 bush. Tomatoes, N.S.W. 2/- to 4/6 special higher, Mangrove Mountain 3/- to 4/-, few 6/- half case. Vic. Portland 7/- to 9/-, special higher per bushel, Qld. Stanthorpe 3/- to 4/- half case.

QUEENSLAND.

Brisbane (18/5/36).—Messrs. Clark and Jesser report as follows:—For the greater part of the past month our market has been well supplied, but a scarcity has occurred in Apples during the past few days, causing a sharp rise in values.

The ruling prices at present are:—Apples: Jon. 9/- to 10/-, 2½ size 7/- to 7/6, SPM and other colored varieties 7/- to 8/6, Granny Smiths are scarce and realising 10/- to 11/-; Pears: Winter Coles 2½ to 2¾ 12/-, small sizes 9/- to 10/-, Giblins 9/- to 10/-, Jos. 10/- to 11/-, W.N. 10/- to 11/-, Keiffers 6/- to 7/-. Local Oranges are now plentiful and present values are 6/- to 8/-. Fewtrell Mandarins 7/- to 9/-. Custard Apples, 4/6 to 5/- ½ case. Tomatoes have been in very heavy supply for some time and are realising 3/- to 4/- for first quality, while second grade are slow of sale at 1/- to 2/-. Cabbage, 5/- to 6/- per dozen. Pineapples are very scarce, Smooths being worth 9/- to 10/- case, while Roughs are

un procurable at the present time. Carrots 1/- to 1/6 doz. bunches. Beet-root, 1/6 to 2/- doz. bunches. Pumpkins, 3/6 cwt. Bananas, 7/- to 10/- case.

The weather has been fine here for the past few weeks, and trade generally has been good.

Brisbane (22/4/36).—Messrs. Robsons Pty. Ltd. report as follows:—Apple values took a sharp rise this week, the "Ngatoro," from Tasmania, which arrived on the 20th inst., only carried 4,500 cases. Prices to-day were as follows:—Jons. 12/-, Cleos, Scarlets, French Crabs 10/-, and Aromatics 9/-. Stanthorpe G. Smiths are selling freely at 12/-.

Pears: Winter Coles to-day realised to 14/-, and Giblins to 12/-.

Local Citrus, is now coming to hand more freely, Oranges selling from 6/- to 8/-, Lemons to 17/-.

Grapes: All choice consignments are meeting a keen demand and are realising to 11/- case.

Pineapples: Smooth leaf to 9/- case and Roughs to 10/-.

Custard Apples: Popular sizes are selling to 6/- case.

Bananas: Sixes to 8/6, sevens to 10/-, eights to 11/-.

Vegetables: The market is over-supplied with Tomatoes, sales being made from 1/- to 3/6. Beans sold well to-day at 8/6 per 30 lb. bag and Peas to 9/- bush. Cabbage to 6/- dozen.

Produce: Potatoes to £10. Swede Turnips and Onions to £11, Pumpkins £3 ton and Sweet Potatoes to 5/- cwt.

The weather in Brisbane was ideal during the Easter holidays, this having a beneficial effect on all sales.

Herbert Wilson Pty. Ltd.

WHOLESALE FRUIT MERCHANTS
AND COMMISSION AGENTS

Nos. 1 and 10, Wholesale Fruit Market, Melbourne.

Accredited Agents for Victorian Central Citrus Association
and Affiliated Association.

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Private Phone: M 3055.

Bankers: National Bank of Australasia (Western Branch), Melb.

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(Wm. Robson, Managing Director.)

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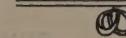
N.S.W. Representatives.—Macdermott & Sheedy, Municipal Fruit Markets, Sydney.
West Aust. Representative.—A. Hicks, 18 William Street, Perth.

Victorian Representatives.—Messrs Gollin & Co. Pty. Ltd., 561 Bourke Street, Melbourne.

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Fruitgrowers of Otago
Limited, Dunedin

PERSONAL SUPERVISION
OF
EVERY CONSIGNMENT.

Cheques posted promptly.

Drop us a Line or Cable:
"Peachbloom," Dunedin.

WESTERN AUSTRALIA.

Perth (27/4/36). — Apples, Jon. flats 2/6 to 5/-, dumps 4/- to 8/6, (special to 9/6); Dums, flats 3/- to 3/6; dumps 3/6 to 6/6; G. Smith, flats 3/- to 4/6, dumps 4/- to 8/6; Cleo., flats 3/- to 4/6, dumps 3/- to 6/9; Del. dumps, 4/- to 7/6; other varieties, dumps 4/- to 5/6. Citrus: Val. Oranges, flats 2/6 to 7/6, dumps 3/6 to 7/6 (special to 9/6); Lemons 4/- to 11/6. Other lines: Pears: Bartlett, flats 5/- to 8/6; other varieties, flats 2/- to 5/-, dumps 4/- to 6/6; Grapes, open, White Muscatel, 3/- to 5/9, Black Wortley Hall 4/- to 6/6; Passionfruit to 9/6; Tomatoes 1/- to 9/6; Bananas, 18/- to 25/6, crate; Quinces, dumps 5/6 case.

NEW ZEALAND.

Dunedin (8/4/36). — Messrs. Reillys Central Produce Mart Ltd., report as follows:—The week prior to the Easter holidays, was a busy one, full supplies of fruit and vegetables arriving, and meeting only a fair inquiry. Although first grade Apples and Pears are realising slightly better values, still prices can hardly prove payable to growers. Coxes Orange and good dessert Pears are selling fairly satisfactorily.

Good supplies of Peaches have been received, and for these prices have been low.

Tomatoes have had a good inquiry, and slightly better values are obtainable for first-grade fruit. Grapes have firmed in price.

Ripe Bananas and Cal. Oranges are meeting a good demand. Advice received from the "Maui Pomare" states that this vessel is due at Lyttelton on the 13th with a full cargo, the Dunedin portion of Niues and Samoans coming to hand on Wednesday.

In the vegetable market Cabbage is in over supply. Cauliflowers are now sufficient for requirements, and other lines of fresh vegetables are ample for the demand. Pie Melons, Pumpkins and Marrows are arriving in increasing quantities. Canterbury Onions and Potatoes are selling well, values for Potatoes having firmed during the week.

Prices: Cal. Lemons 50/-, Cal. Grapefruit 32/-, Cal. Navels 35/-, Ripe Bananas 20/-, Pines 16/- to 18/6. Apples: Grav. 5/- to 6/6, Cox's Orange 8/- to 10/6, Jon. and Del. 4/- to 6/6; Cooking Apples 4/- to 5/6. Pears: Marie Louise 4/- to 5/6,

Beurre Bosc and Conference 4/- to 5/-, Cooking Pears 3/- to 4/6, Quinces 3/-.

Per Half Case: Outside Cucumbers 2/9 to 3/9, Peaches 1/6 to 3/6, Nectarines 6/- to 6/6, Pears, Conference and Beurre Bosc 2/6 to 3/6, cooking Pears 1/- to 1/6, Cape Gooseberries 6/-, Passionfruit 4/- to 5/6, Quinces 2/-.

MARKETING FRUIT IN SYDNEY.

Further Conference to be Held.

HERE was a good attendance of growers' representatives at the conference held at the offices of the N.S.W. Chamber of Fruit and Vegetable Industries on April 16. Representatives were there from most of the important fruit growing districts, and while most of them agreed with the objects of the Chamber to further the interests of the trade in the better marketing of fruit, there was a difference of opinion in the methods to be adopted.

After considerable discussion, it was decided that a further meeting be held in the near future, at which both the growers' representatives and the Chamber table a programme of what each considers would be the best means of attaining the object desired. It is to be hoped that something concrete will eventuate as a result of the next conference.

LONDON REPORT.

The latest reports received from London, dated March 1, says that at that date the market for Greek Currents continued firm, and that higher prices were anticipated later in the year, although February sales were lower than during January.

Considering the excellent quality of the Australian offerings, they could not understand the apathy of buyers in not ordering their requirements, especially in view of anticipated shortage and the small supplies on hand. In Sultanas the prices quoted were:—Australian, 43/- to 48/; Cretan and Greek, 44/- to 45/-.

Ethel: "Maud says she uses Lemon juice on her face for her complexion."

Mary: "I wondered where she got that sour look!"

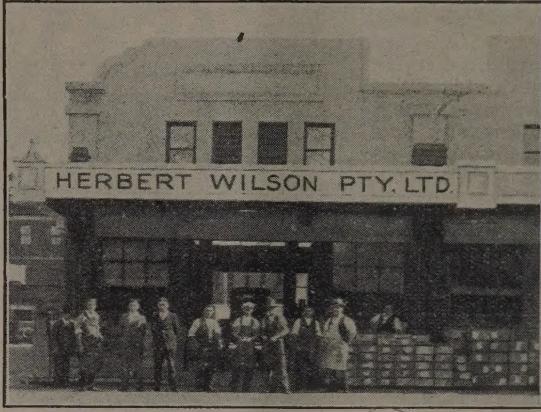
FIRMS IN THE FRUIT TRADE

HERBERT WILSON PTY. LTD.

(No. 9 of Series.)

M. R. HERBERT WILSON, the managing director of Herbert Wilson Pty. Ltd., has had more than 25 years' practical experience of the wholesale fruit trade, and possesses a knowledge of fruit, and the handling of it, which is second to none. His father was the late Mr. H. J. Wilson, who for a great number of years was associated with McClure, Valentine & Co., and whose

peel streets, which is used as ripening rooms and selling floor for Bananas, of which large quantities are handled. The Bananas are ripened by the most up-to-date methods under the personal supervision of Mr. F. W. Smith, who has had nearly 40 years' experience in the ripening and handling of Bananas. This is a most important feature of the company's activities. Mr. Wilson has as co-director



View of store of H. Wilson Pty. Ltd., at Wholesale Fruit Market.

name is still remembered by many growers and buyers because of the outstanding knowledge and ability which he possessed.

For some time prior to his father's death, Mr. Wilson worked side by side with him, and thus gained early experience of the trade. From that time up till the present, he has never looked back, and now the company, of which he is managing director, is one of the largest wholesale merchants in the trade.

The main selling floor of the company is at No. 10, Wholesale Fruit Market, which is one of the best positions allotted, being right in the centre of the market square and also on the corner of a block. In addition to being an accredited agent of all the leading growers' organisations, this company handles the most prominent brands of South Australian citrus, Celery and Tomatoes, in some cases being sole agent.

The company also occupies No. 1 Store at the corner of Franklin and

Mr. Hyman Grinblat who, also has had a long experience of the trade. Mr. Grinblat takes a most active part in both selling and administration and is highly capable in the execution of his duties. He has been associated with Mr. Wilson since the latter converted his business into a company five years ago.

Many important changes have taken place in the industry since Mr. Wilson entered it, not the least of these being a better understanding between grower and agent. Mr. Wilson believes that the average grower now has a better knowledge of marketing and its especial difficulties than was the case 20 years ago, due in a large measure to the closer individual contact established between the parties concerned. Mr. Wilson pays frequent visits to fruit-growing districts, and all growers who have met him will agree that he is most sympathetic with the grower's point of view, and is ever on the alert in the interests of the grower and the industry.

FIRST CITRUS NURSERY.

The Cumber Nursery, at Ermington, near Sydney, is the oldest citrus nursery in Australia, and has been in the hands of the McKee family for 90 years continuously. Quite recently officers of the Fruit Section of the Agricultural Department inspected the nursery and announced that the young trees were as strong and healthy as any previously grown there, and in many instances surpassed the high standard usually associated with this nursery. Inspection of the nursery is welcomed at all times.

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Correspondence Invited.

H. JONES & CO. PTY. LTD.
Hobart.

SPECIAL NOTICE TO FRUITGROWERS

All Members
under
Fidelity Bond

In response to numerous requests from growers for information as to who are members of the Wholesale Fruit Merchants' Association of Victoria

the following list is given. All are members of the above Association, and are registered firms carrying on business in the

WHOLESALE FRUIT MARKET, MELBOURNE.

STAND NUMBERS ARE AS INDICATED IN PARENTHESES.

T. STOTT & SONS (26).

H. L. E. LOVETT & CO. (23).

A. E. PITTS (14).

J. DAVIS PTY. LTD. (8).

W. S. TONG (31).

SILK BROS. PTY. LTD. (24-25).

J. G. MUMFORD (35).

GOLDEN VALLEY FRUIT CO. PTY. LTD. (15).

J. W. ROSS (13).

H. M. WADE & CO. (21).

DAVID SMITH PTY. LTD. (3).

SILBERT, SHARP & DAVIES PTY. LTD. (17)

W. A. WATKINS (5).

P. A. PATRIKEOS (36).

G. WOOLF & SONS (29-30).

F. CAVE & CO. PTY. LTD. (9).

R. CORNISH & SONS (5).

J. HYMAN & SON (51).

HERBERT WILSON PTY. LTD. (10).

FRANK BOOTH & SONS PTY. LTD. (16).

GEO. LISTER PTY. LTD. (12).

TIM YOUNG & CO. PTY. LTD. (18).

F. W. VEAR PTY. LTD. (28).

YEE HOP LOONG & CO. (32).

Correspondence is invited by the Association.

Office : 21 Wholesale Fruit Market,
Queen Street, Melbourne. Phone F 4866.

The Home Circle

CHILD WELFARE NOTES

By Olive M. Green, Sister-in-Charge, Baby Health Clinic, Launceston.

The Care of the Teeth.

WE ARE CONSTANTLY being reminded that good, sound teeth play a very important part in the maintenance of good health, and that decayed teeth invite ill-health and disease. How, then, can we build these sound teeth and keep them strong?

The Growth of the Teeth.

Seven months before baby is born, the foundations of every tooth he will ever have in his head have been laid down, and at birth his first set of teeth are all completed and tucked away under the gums, whilst active work has begun on the second or permanent set. From then onwards the building grows apace, and most of the crowns of the permanent set are quite completed by the time the child is three years of age.

Teeth are built out of the blood, firstly of the expectant mother and later of the child itself. This blood contains the material required, and conveys it to the tiny cell-workers busy building the teeth and enameling the crowns. It is therefore essential that the blood stream be kept pure, and the blood rich in mineral salts and other elements necessary for good bone and teeth formation.

The Expectant Mother.

Apart from diet, the chief considerations for the expectant mother are healthy, well-regulated habits, with sufficient rest and sleep, abundance of fresh air and sunshine, complete freedom from constipation, and a happy mental outlook. The mother should visit her dentist early in her pregnancy and have her teeth attended to if necessary. Decayed teeth will poison the mother's blood stream, and be a danger to herself and her unborn child.

The daily diet should consist of a sufficient quantity of simple, nutritious food, and there should be three meals a day only. This simple diet includes wholemeal bread, milk, cream, butter, eggs, a quantity of vegetables and fresh fruit, a very little meat, and three to four pints of water daily. Fruit such as Oranges, Apples, Prunes, Figs, Raisins, Dates, and vegetables such as Cabbage, Lettuce, Spinach, Celery, Tomato, Silver Beet, etc., are rich in mineral salts. Cod liver oil half a teaspoon daily, is excellent for the teeth of the unborn baby.

Baby's Food.

There are two points to remember: Firstly, the food must provide the essential building materials, particularly mineral salts and vitamins; secondly, it must provide ample exercise for the teeth and jaws.

Mother's Milk

is a perfect food, and sucking at the breast provides the most natural form of jaw exercise possible.

If artificial feeding has to be resorted to, the baby must receive a daily allowance of cod liver oil in some form (preferably Kariol), and some fresh fruit or raw vegetable juice. Humanised milk is the best substitute for mother's milk, and the milk mixture made with Kariol is better than that made with top milk or cream.

To ensure sufficient exercise for the mouth and jaws of the bottle-fed baby, he must be provided with a small-holed teat and his bottle held during feeding, with a steady slight pull maintained to secure active vigorous suction.

Bones and Crusts.

Just before the eruption of the first little teeth (usually at six months), teach baby to bite and chew on a smooth, scraped meat bone. At nine months he may be given hard foods in the form of fingers of twice-baked bread (brown bread for preference). Bake these crusts in a slow oven, crisping them right through. Let these be eaten just before the usual feed times when babe is hungry, and not between meals.

Diet From One Year Onwards.

The general principles are the same as for the mother—the three daily meals including something crisp, tough, or hard to chew on. The greater part of the bread eaten should be wholemeal, and the other cereals prepared from the whole grain. A pint of milk daily is essential, and the cod liver oil should be continued in small quantities during the second year of life. Water, green vegetables and fresh fruit are necessities. Give a piece of raw, ripe apple at the end of each meal to cleanse the teeth.

It is the duty of every parent to teach the child to masticate his food properly. The milk, or other fluid, should be given at the end of the meal—and not mixed in with the food, thus preventing thorough mastication. The bolting of food, washing it down without chewing, is injurious to the digestion as well as the teeth.

Sugar and Sweets.

Absolutely ruinous to the teeth and digestion is the practice of sweet-eating, and yet it is one that is so generally adopted. Sweets, biscuits, cakes and other sugary and soft, starchy foods (particularly when given between meals) must be avoided if the teeth are to be kept free from decay.

Sugar must not be sprinkled on baby's food, as he will get ample carbohydrates, in the form of starch and sugar, in his natural foods. In his second year he may be given natural sugars in the form of honey, and dates, raisins and other dried fruits, instead of extra cane sugar.

The Toothbrush.

From two years onwards the teeth must be brushed after every meal, all the surfaces being carefully cleansed.

Use a soft "Tom Thumb" brush, and later one with stiffer bristles. Water is the first dentifrice, then soda or salt may be used. The brush must be hung up to dry after use, and kept free from dirt and germs. Have the teeth overhauled by the dentist every four or six months, and watch carefully for any decay.

Warning.

Dummies and Thumb-Sucking are the enemies of good teeth.—"Tasmanian Journal of Agriculture."

WRONG COOKING OF VEGETABLES.

Destroys Food Value.

That an improvement in cooking methods is long overdue is the belief of most dietists and doctors. They state that vegetables lose much of their nutrient and vitamin value by excessive cooking. They claim that Potatoes lose 50 per cent. food salt when peeled and left soaking in water, 15 per cent. when placed directly into boiling water, but only 1 per cent. when baked or boiled in their coats.

Similarly, Cabbage and Cauliflower subjected to long cooking lose heavily in food value. They should be steamed instead of boiled.

Beekeeping Notes

Winter Work.

AFTER the honey-flow is finished for the season and the extracting is ended, the next work will be the preparation of the bees for the winter. We will suppose that sufficient stores have been left in the hives. Generally speaking, from 30 to 40 lbs, is required to carry a colony over the winter and into the spring, advises E. A. Earp in "N.Z. Journal of Agriculture."

If sealed combs of honey from clean colonies are not available, colonies that are short of stores must be fed with syrup composed of equal parts of sugar and water. It is better to feed heavily now where necessary, rather than wait until the bees have used up their meagre stores.

The bees cannot leave their cluster during the cold months of winter and early spring to take down any syrup that may be offered them, or generate sufficient heat to evaporate any surplus moisture it may contain. It is not recommended to feed sugar syrup, but feeding of sugar syrup is advisable in the absence of sealed honey stores, as there is a risk of introducing disease by the feeding of honey unless it is definitely known that the apiary from which it is obtained is quite free from foul-brood and has been so for some years.

It is generally admitted that honey-fed bees have a better constitution than those fed with sugar, and build up better in the spring. There is also reason to believe that some sorts of honey are better than others, but of this we have no definite proof. There is a marked difference in the specific gravity of our honeys.

The entrance of all colonies should now be reduced. The average colony will require an entrance 3 in. to 4 in. wide. If the height is more than $\frac{5}{16}$ in., this should also be reduced in order to prevent mice getting into the hive.

When stacking away the supers of combs for the winter, a sheet of newspaper should be placed between each super and a roof or its equivalent on top, to keep out mice and wax-moths. Any foundation that may be left over should be packed away in a light and air-proof box. It becomes very brittle if left exposed to the atmosphere.

It is advisable to keep a sharp lookout for foul-brood, and, if it is discovered, either to deal with it at once by one of the methods recommended or to destroy the colony. It does not pay to risk the spreading of foul-brood by robbing during the winter.

If robbing sets in, a strip of wood in which an escape has been fitted should be placed across the entrance of the colony that is being robbed, and left there until after sunset. Then the entrance should be reduced to not more than 1 in. in width.

Weak and Queenless Colonies.

As advised last month, queenless colonies should be disposed of by uniting them with strong queen-right colonies. This is most readily accomplished in the evening when all field bees have returned. After taking the roof and mat from the queen-right colony, place a sheet of newspaper immediately over the top of the frames and carefully place the queenless colony on top. No smoke will be required if the hive is handled gently. Weak colonies should be similarly united if the queen is of little value. If the queen is young, brood-rearing will probably be kept up for some time, and such colonies, though weak, will probably be worth saving. This is best accomplished by shifting them into a small hive, called a nucleus box, large enough to take only four frames.

HONEY SHOULD SELL ITSELF.

Carroll Sums it Up.

In writing in the "American Bee Journal," Elmer Carroll seems to hit on the right idea. He says:

The use of honey as a safe sugar for diabetics always brews an argument. As has been said hundreds of times, it is safe to use honey in many instances but not in all cases, thus the reason for first consulting your physician.

Quality honey should sell itself for honey's sake without having to resort to such propaganda as diabetically safe, medicinal value and so forth. And it is as hard to make some people like honey as it is to deprive others of this delicious sweet. More honey can be retailed by giving the customer a mental picture of industrious bees working among sweet smelling blossoms, than a picture of a prescription counter.

STINGLESS BEES.

Interest in England has been aroused by the arrival by air-mail, consigned to the London Zoo, of a shipment of stingless bees from Rhodesia. The bees are only slightly larger than the common housefly. It is reported that American beekeepers are endeavoring to evolve a strain of stingless bees, but no definite success has yet been announced.

SUBSCRIPTION ORDER FORM

To the Manager,
The "Fruit World"—

Sir—Enclosed please find remittance for a year's subscription to the "Fruit World & Market Grower," commencing with the next issue.

Signed _____

Address (full postal) _____

Date _____

SUBSCRIPTION: 6/- Per Annum, post free. 7/6 including the "Fruit World Annual."

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N.S.W. OFFICE:
439 Kent Street
Sydney.

BEEKEEPING—

(Continued from page 39.)

THE BREEDING OF BEES.

Beekeeping as a hobby cannot really be successful unless attention is given to the breeding of the bees, says a writer in N.S.W. Agricultural Notes. In working a few colonies only it is neither expensive to purchase the required number of Italian queen bees nor is it much trouble to introduce the new stock.

After a time, when the enthusiast gains experience, queen bees can be raised in the apiary to provide any replacements desired.

INTRODUCING QUEENS.**Some Advice to Beginners.**

Many queens are lost when introducing, not only amongst beginners, but also experienced beekeepers sometimes have bitter feelings over the loss of valuable queens. This is on account of the variable conditions and different methods of introducing. When conditions are good, that is, when there is plenty of pollen and honey being gathered, the weather is fine and the bees are happy, the instructions sent on the address card are usually sufficient, and if carried out carefully the method is generally successful.

The best time to give a queen to a colony is when it has been queenless for from 24 to 48 hours. If queen cells are started it is better to wait until all the brood is capped and then destroy all the queen cells before introducing. If conditions are not really good it is safer to remove the escort bees from the cage and introduce the queen alone; or an easier and more satisfactory way is to remove the queen and place her in a Miller introducing cage with the hole plugged with candy, and introduce with this cage. The bees will feed the queen through the gauze until released by the candy being eaten out.

Then there is the water method, which is quick and has been very successful. Where a lot of queens have to be introduced, we think it is the best.

Mr. L. E. Snellgrove, a beekeeper in England, is given credit for introducing this novel and useful method.

Place the queen in an empty matchbox, and opening it slightly, pour in slightly warmed water until full. Shake the box gently to and fro, and pour the water out, and allow the queen to walk down among the bees. —"Farmer and Dairyman" (W.A.).

The Pig Pen**MEAT MEAL FOR PIGS.**

On an average, $\frac{1}{2}$ lbs. of meat meal has approximately the same food value for pigs as one gallon of skim milk. This is worth remembering by farmers who have a limited supply of milk for their stock, or when the milk supply diminishes.

Even in meat meal there is some variation as to quality, and farmers are advised to use the brand or brands that give the most food value.

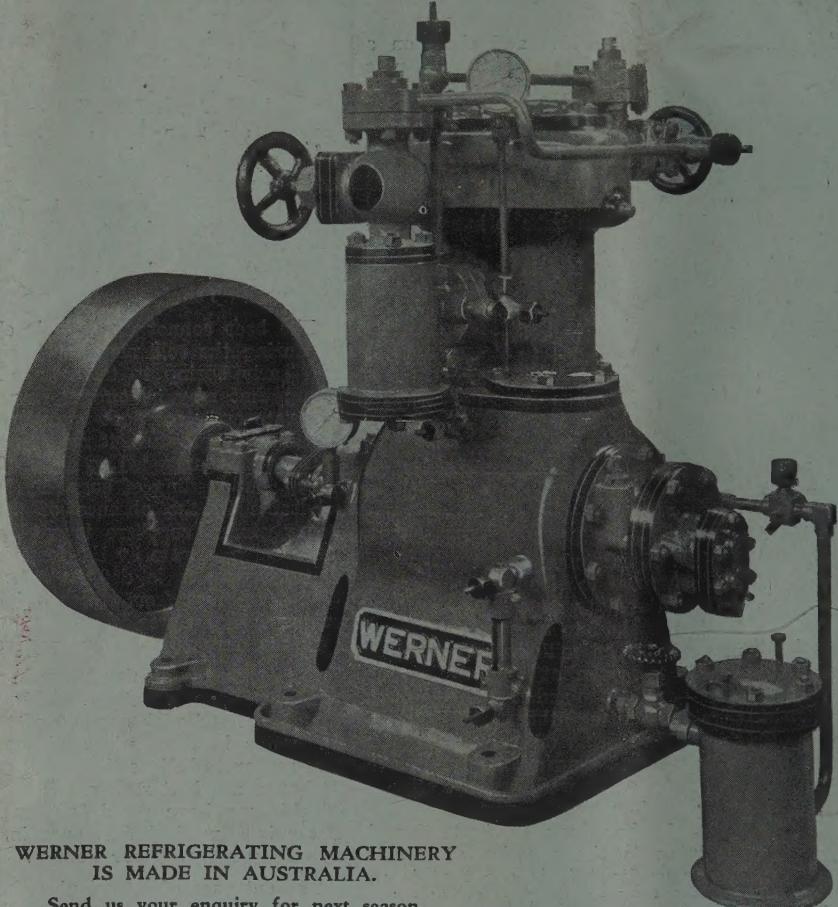
The use of meat meal is recommended in the following quantities: Young pigs up to 7 weeks, 4 oz. daily; from 7 to 16 weeks, 8 oz. daily; sows in pig, 8 oz. daily, but three days after farrowing this should be increased to 2 lbs. daily until the young pigs are weaned. Meat meal may be fed dry or mixed with any liquid or other feeds.

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MANGE IN PIGS.

Lime and Sulphur Recommended.

A veterinary officer, writing in the "Farmer and Settler" (N.S.W.) recently, gave the following advice upon the treatment of pigs suffering from mange.

Treatment of mange consists of dipping the affected pigs in a solution of lime and sulphur, made as follows:— $\frac{1}{4}$ lb. of sulphur, 1 lb. of quick lime, 2 gal. of water.

Place the sulphur in a bucket and then put the lime on top of it. Stir the lime and sulphur mass, gradually adding water at the same time, until an even, creamy paste is produced. Now add the remainder of the two gallons of water and boil the solution over a fire until all solid matter is dissolved. This takes two or three hours, and the remaining solution is dark brown in color.

When the boiling is complete, add sufficient water to bring the final amount back to the original two gallons. This now forms a stock solu-

tion. When required for use, one part of the stock solution is added to two parts of warm water. Thus, the above quantities are sufficient to make six gallons of dip.

The solution should be made up freshly and used luke warm for each dipping. The pigs are immersed in it, and the solution rubbed into the skin with a cloth or scrubbing brush. Each pig must remain in the fluid for approximately two minutes, and every portion of the skin exposed to it, including the ears, face, etc.

Young pigs, of course, will be dipped, but full-grown sows and boars must be washed, providing that each pig is washed for at least five minutes. The udder and between the legs of breed sows should receive special attention. It is suggested that young pigs be dipped first and the solution left over be then used for washing the larger pigs.

Magistrate: "Did the prisoner offer any resistance?"

P.C. 1234: "Yes, your honour; but only half a crown, so I didn't take it."

BRAN FOR PIGS.

In reply to the question, is it profitable to feed bran to pigs? the "Tasmanian Fruitgrower" says:—Bran is not a profitable food for pigs, especially when fed alone or when it forms a large percentage of the ration. It is known to be an excellent food for cows, but with the pig the effect is quite different, as this animal finds bran difficult of digestion. Bran has a lower nutritive value than pollard, barley, or rye, chiefly because of the high proportion of inert matter found in it, and its coarse, fibrous nature. With young pigs it is not all digested. Bran may be regarded as only a complementary food in the pig ration. Where sows are suckling a litter it has been found useful in maintaining the milk flow and as a laxative food.